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=> s zinc finger and (ribosome or polysome)  
L1 61 ZINC FINGER AND (RIBOSOME OR POLYSOME)

=> duplicate remove l1

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L2 ANSWER 1 OF 40 MEDLINE on STN  
AN 2003275216 IN-PROCESS  
DN 22686540 PubMed ID: 12801648  
TI Characterization of the 5'-flanking region of the rat AJ18 gene.  
AU Jheon Andrew H; Suzuki Naoto; Nishiyama Takehisa; Cheifetz Sela; Sodek  
Jaro; Ganss Bernhard  
CS Department of Biochemistry, University of Toronto, Room 239 Fitzgerald  
Building, 150 College Street, Toronto, Ont. M5S 3E2, Canada..  
a.jheon@utoronto.ca  
SO GENE, (2003 May 22) 310 203-13.  
Journal code: 7706761. ISSN: 0378-1119.  
CY Netherlands  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS IN-PROCESS; NONINDEXED; Priority Journals  
OS PDB-AJ18  
ED Entered STN: 20030613  
AB Kruppel-associated box (KRAB) domains are present in one-third of all C(2)H(2) zinc finger containing proteins, making the KRAB/C(2)H(2) proteins one of the largest known families of putative transcription repressors. AJ18 has been identified as a novel KRAB/C(2)H(2) gene that is involved in the differentiation of osteogenic cells. To study the regulation of expression of the AJ18 gene, the 5'-flanking region of the AJ18 gene was obtained by screening a rat genomic library. This region was sequenced, and the transcription start site mapped by primer extension. The AJ18 gene consists of at least four exons, the first exon coding for an unusually long 2.3 kb 5'-UTR region. A putative internal ribosome entry site, immediately upstream of the translation initiation site, is indicated from the complementarity of a 12 nucleotide sequence with a region in the rat 18S rRNA. Chimeric constructs encompassing the region surrounding the transcription start site (-77-+171), as well as constructs with additional 1.9 kb upstream from this region revealed strong transcriptional activity when ligated to a luciferase reporter gene and tested in transient transfection assays. This activity was lost on deletion of the 5'-flanking region to -77. In addition, transcriptional activity was progressively lost with the inclusion of downstream sequences extending into the 5'-UTR. Several

known response elements for proteins such as Runx2, NFkappaB, Smads, Sp1, and Ets1 are retained within the conserved sequences of rat and mouse AJ18, which was retrieved from mouse genomic libraries. Interestingly, the transcriptional activity was approximately 100-fold higher in the osteocarcinoma cell line ROS 2.8/17 compared to the fibroblast-like C3H10T1/2. Notably, this is the first gene promoter from the large KRAB/C(2)H(2) zinc finger family of proteins to be identified and characterized.

L2 ANSWER 2 OF 40 MEDLINE on STN  
AN 2002675309 MEDLINE  
DN 22323197 PubMed ID: 12202495  
TI Identification of ribosomal proteins specific to higher eukaryotic organisms.  
AU Gueydan Cyril; Wauquier Corinne; De Mees Christelle; Huez Georges; Kruys Veronique  
CS Laboratoire de Chimie Biologique, Institut de Biologie et de Medecine Moleculaires, Universite Libre de Bruxelles, 12 rue des Profs. Jeener et Brachet, 6041 Gosselies, Belgium.. cgueydan@ulb.ac.be  
SO JOURNAL OF BIOLOGICAL CHEMISTRY, (2002 Nov 22) 277 (47) 45034-40.  
Journal code: 2985121R. ISSN: 0021-9258.  
CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
OS GENBANK-AJ272345  
EM 200301  
ED Entered STN: 20021119  
Last Updated on STN: 20030108  
Entered Medline: 20030107  
AB This report describes the identification of a novel protein named PS1D (Genbank accession number ), which is composed of an S1-like RNA-binding domain, a (cysteine)x3-(histidine) CCCH-zinc finger, and a very basic carboxyl domain. PS1D is expressed as two isoforms, probably resulting from the alternative splicing of mRNA. The long PS1D isoform differs from the short one by the presence of 48 additional amino acids at its amino-terminal extremity. Analysis of PS1D subcellular distribution by cell fractionation reveals that this protein belongs to the core of the eukaryotic 60S ribosomal subunit. Interestingly, PS1D protein is a highly conserved protein among mammals as murine, human, and simian PS1D homologues share more than 95% identity. In contrast, no homologous protein is found in lower eukaryotes such as yeast and Caenorhabditis elegans. These observations indicate that PS1D is the first eukaryotic ribosomal protein that is specific to higher eukaryotes.

L2 ANSWER 3 OF 40 MEDLINE on STN DUPLICATE 1  
AN 2002470944 MEDLINE  
DN 22218039 PubMed ID: 12118004  
TI Downstream codons in the retinoic acid receptor beta -2 and beta -4 mRNAs initiate translation of a protein isoform that disrupts retinoid-activated transcription.  
AU Chen Lucinda I; Sommer Karen M; Swisshelm Karen  
CS Department of Pathology, University of Washington, Seattle, Washington 98195, USA.  
NC R01 CA82455 (NCI)  
SO JOURNAL OF BIOLOGICAL CHEMISTRY, (2002 Sep 20) 277 (38) 35411-21.  
Journal code: 2985121R. ISSN: 0021-9258.  
CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 200210  
ED Entered STN: 20020917  
Last Updated on STN: 20030105

Entered Medline: 20021024

AB Retinoic acid receptors (RARs) are essential for the differentiation and maintenance of normal epithelium. In studies of RARs in breast cancer, there are striking differences in the expression of certain protein isoforms of the RARbeta gene between cells derived from normal human mammary glands and those derived from breast tumors. While the protein isoforms RARbeta2 and RARbeta4 consist of the longest open reading frames of the RARbeta2 and RARbeta4 mRNAs, respectively, we find that a fraction of scanning ribosomes bypass these upstream RARbeta2 and RARbeta4 protein start codons and initiate translation downstream. This downstream translation initiation site is identical in the RARbeta2 and RARbeta4 transcripts and generates a third RARbeta protein isoform, here termed RARbeta' (formerly human RARbeta4). RARbeta' lacks protein domains found in the N terminus of RARbeta2 and RARbeta4, including one of two zinc fingers required for DNA binding. However, RARbeta' retains the ability to heterodimerize with RXRalpha and interact with transcription cofactors. In reporter gene assays, RARbeta' repressed retinoic acid-activated transcription of co-transfected RARbeta2, RARbeta4, and RXRalpha. This repression required the presence of acidic amino acids within the AF2 domain. These findings demonstrate an antagonistic role for RARbeta' in signaling by retinoic acid.

L2 ANSWER 4 OF 40 MEDLINE on STN DUPLICATE 2  
AN 2002280409 MEDLINE  
DN 22015701 PubMed ID: 12020843  
TI Identification and characterization of genes abnormally expressed in wing-deficient mutant (flugellos) of the silkworm, *Bombyx mori*.  
AU Matsunaga T M; Fujiwara H  
CS Department of Integrated Biosciences, Graduate School of Frontier Sciences, University of Tokyo, Bioscience Building 501, Kashiwanoha 5-1-5, Kashiwa, Chiba 277-8562, Japan.  
SO INSECT BIOCHEMISTRY AND MOLECULAR BIOLOGY, (2002 Jun) 32 (6) 691-9.  
Journal code: 9207282. ISSN: 0965-1748.  
CY England: United Kingdom  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 200207  
ED Entered STN: 20020522  
Last Updated on STN: 20020725  
Entered Medline: 20020724  
AB The wing-deficient mutant, flugellos (f1), of the silkworm lacks four wings in the pupa and the adult, due to aberrant wing morphogenesis during metamorphosis. To elucidate the mechanisms of wing-specific deficiencies in the f1 mutant, we used mRNA differential display and identified five genes abnormally expressed in the f1 wing discs. Northern blot and RT-PCR analyses revealed that four genes were overexpressed, but the fifth one was not transcribed in the f1 wing discs. The expression level of ribosome-associated protein p40 in the f1 wing discs was elevated approximately 10 times compared to the wild-type (WT) discs. Another overexpressed gene CB10 encodes a novel wing-specific protein with a putative zinc-finger motif. Overexpression of two components of extracellular matrix, cuticle protein 18 (BMCP18) and a fibrillin-like protein AD10, may result in the abnormal wing morphogenesis in the f1 mutant. In contrast, a novel member of multifunctional Ca2+-binding protein annexins, designated as annexin b13 (Anx b13), was expressed dominantly in the wing discs of WT but completely repressed in the f1 tissues. Strong expression of Anx b13 in wing discs during the fourth and fifth instar indicates that ANX B13 plays an important role in wing morphogenesis.

L2 ANSWER 5 OF 40 MEDLINE on STN DUPLICATE 3  
AN 2002285344 MEDLINE  
DN 22021611 PubMed ID: 11968008

TI Yeast methionine aminopeptidase type 1 is ribosome-associated and requires its N-terminal **zinc finger** domain for normal function *in vivo*.  
AU Vetro Joseph A; Chang Yie-Hwa  
CS Edward A. Doisy Department of Biochemistry and Molecular Biology, St. Louis University Health Sciences Center, St. Louis, Missouri 63104, USA.  
SO JOURNAL OF CELLULAR BIOCHEMISTRY, (2002) 85 (4) 678-88.  
Journal code: 8205768. ISSN: 0730-2312.  
CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 200210  
ED Entered STN: 20020528  
Last Updated on STN: 20021011  
Entered Medline: 20021010  
AB Methionine aminopeptidase type 1 (MetAP1) cotranslationally removes N-terminal methionine from nascent polypeptides, when the second residue in the primary structure is small and uncharged. Eukaryotic MetAP1 has an N-terminal **zinc finger** domain not found in prokaryotic MetAPs. We hypothesized that the **zinc finger** domain mediates the association of MetAP1 with the **ribosomes** and have reported genetic evidence that it is important for the normal function of MetAP1 *in vivo*. In this study, the intracellular role of the **zinc finger** domain in yeast MetAP1 function was examined. Wild-type MetAP1 expressed in a yeast map1 null strain removed 100% of N-terminal methionine from a reporter protein, while **zinc finger** mutants removed only 31-35%. Ribosome profiles of map1 null expressing wild-type MetAP1 or one of three **zinc finger** mutants were compared. Wild-type MetAP1 was found to be an 80S translational complex-associated protein that primarily associates with the 60S subunit. Deletion of the **zinc finger** domain did not significantly alter the **ribosome** profile distribution of MetAP1. In contrast, single point mutations in the first or second **zinc finger** motif disrupted association of MetAP1 with the 60S subunit and the 80S translational complex. Together, these results indicate that the **zinc finger** domain is essential for the normal processing function of MetAP1 *in vivo* and suggest that it may be important for the proper functional alignment of MetAP1 on the **ribosomes**.  
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L2 ANSWER 6 OF 40 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
AN 2002:230880 BIOSIS  
DN PREV200200230880  
TI The role of the **zinc finger** motif and of the residues at the amino terminus in the function of yeast ribosomal protein YL37a.  
AU Dresios, John; Chan, Yuen-Ling; Wool, Ira G. (1)  
CS (1) Department of Biochemistry and Molecular Biology, University of Chicago, Chicago, IL, 60637: irawool@midway.uchicago.edu USA  
SO Journal of Molecular Biology, (22 February, 2002) Vol. 316, No. 3, pp. 475-488. <http://www.academicpress.com/jmb.print>.  
ISSN: 0022-2836.  
DT Article  
LA English  
AB YL37a is an essential yeast ribosomal protein that has a C2-C2 **zinc finger** motif. Replacement of the cysteine residues had yielded variants that lacked the capacity to bind zinc but still supported cell growth. In a continuation of an examination of the relation of the structure of YL37a to its function, the contribution of amino acid residues in the intervening sequence between the internal cysteine residues of the motif was evaluated. Substitutions of alanine for the lysine residues at positions 44, 45, or 48, or for arginine 49 slowed cell growth. The most severe effect was caused by a double-mutation, K48A-R49A.

A mutation of tryptophan 55 to alanine was lethal. Mutations to alanine of six conserved residues (K6, K7, K13, Y14, R17, and Y18) in the amino-terminal region decreased cell growth; the Y14 mutation was lethal. An in vitro assay for binding of YL37a to individual 26 S rRNA domains was developed. Binding of the recombinant fusion protein MBP-YL37a was to domains II and III; the Kd for binding to domain II was 79 nM; for domain III it was 198 nM. There was a close correspondence between the effect of mutations in YL37a on cell growth and on binding to 26 S rRNA. In the atomic structure of the 50 S subunit of *Haloarcula marismortui*, the archaeabacteria homolog of yeast YL37a, L37ae, coordinates a zinc atom and the finger motif is folded and interacts mainly with domain III of 23 S rRNA; whereas the amino-terminal region of L37ae interacts primarily with domain II. The biochemical and genetic experiments complement the three-dimensional structure and define for the first time the functional importance of a subset of the residues in close proximity to nucleotides.

L2 ANSWER 7 OF 40 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
AN 2002:257635 BIOSIS  
DN PREV200200257635  
TI Characterization of an activator gene upstream of lsc, involved in levan synthesis of *Erwinia amylovora*.  
AU Du, Z.; Geider, K. (1)  
CS (1) Max-Planck-Institut fuer Zellbiologie, Rosenthal, D-68526, Ladenburg:  
kgeider@zellbio.mpg.de Germany  
SO Physiological and Molecular Plant Pathology, (January, 2002) Vol. 60, No.  
1, pp. 9-17. <http://www.academicpress.com/pmpp>. print.  
ISSN: 0885-5765.  
DT Article  
LA English  
AB In addition to activation by rlsA, a second gene for positive regulation of levansucrase expression of the fire blight pathogen *Erwinia amylovora* has been detected. The gene rlsB was cloned from a genomic library by suppression of a levan-deficient strain and is located adjacent to the start of lsc in the opposite orientation. The gene rlsB presumably encodes a 6.9 kDa basic protein and is preceded by a potential promoter and a **ribosome** binding site. RlsB belongs to the phage P2 Ogr protein superfamily, which includes other transcriptional activators containing the **zinc-finger** CCCC motif. An rlsB mutant was created from the wild-type strain Eal/79 by gene disruption, which was reduced in levan synthesis and was complemented by the intact rlsB gene. Expression of rlsB also restored extracellular levan synthesis of several natural levan-deficient *E. amylovora* strains, but did not affect amylovoran synthesis. The lsc promoter inserted in an intermediate-copy number plasmid diminished levan synthesis, which could be restored by high expression of rlsB. PCR primers, deduced from rlsB, produced a specific DNA fragment only with *E. amylovora* strains. The genes rlsB and lsc of *E. amylovora* were not detected in the chromosome of *Escherichia coli*, but the genes at both borders localized in the complete genomic map of *E. coli*. It can be assumed that the lsc-gene cluster was introduced into the fire blight pathogen at a late stage of evolution.

L2 ANSWER 8 OF 40 MEDLINE on STN DUPLICATE 4  
AN 2002130634 MEDLINE  
DN 21854920 PubMed ID: 11866090  
TI Moonlighting functions of polypeptide elongation factor 1: from actin bundling to **zinc finger** protein R1-associated nuclear localization.  
AU Ejiri Shin-ichiro  
CS Cryobiosystem Research Center, Faculty of Agriculture, Iwate University,  
Morioka, Japan.  
SO BIOSCIENCE, BIOTECHNOLOGY, AND BIOCHEMISTRY, (2002 Jan) 66 (1) 1-21. Ref:  
176  
CY Journal code: 9205717. ISSN: 0916-8451.

DT Journal; Article; (JOURNAL ARTICLE)  
General Review; (REVIEW)  
(REVIEW, ACADEMIC)

LA English

FS Priority Journals

EM 200210

ED Entered STN: 20020228  
Last Updated on STN: 20021008  
Entered Medline: 20021004

AB Eukaryotic polypeptide elongation factor EF-1 is not only a major translational factor, but also one of the most important multifunctional (moonlighting) proteins. EF-1 consists of four different subunits collectively termed EF-1alpha/beta/beta'gamma and EF-1alpha/gamma/delta in plants and animals, respectively. EF-1alpha x GTP catalyzes the binding of aminoacyl-tRNA to the A-site of the **ribosome**. EF-1beta/beta'gamma (EF-1beta and EF-1beta'), catalyzes GDP/GTP exchange on EF-1alpha x GDP to regenerate EF-1alpha x GTP. EF-1gamma has recently been shown to have glutathione S-transferase activity. EF-2 catalyzes the translocation of peptidyl-tRNA from the A-site to the P-site on the **ribosome**. Recently, molecular mimicry among tRNA, elongation factors, releasing factor (RF), and **ribosome recycling factor** (RRF) has been demonstrated and greatly improved our understanding of the mechanism of translation. Moreover, eukaryotic elongation factors have been shown to be concerned or likely to be concerned in various important cellular processes or serious diseases, including translational control, signal transduction, cytoskeletal organization, apoptosis, adult atopic dermatitis, oncogenic transformation, nutrition, and nuclear processes such as RNA synthesis and mitosis. This article aims to overview the recent advances in protein biosynthesis, concentrating on the moonlighting functions of EF-1.

L2 ANSWER 9 OF 40 MEDLINE on STN

AN 2001481516 MEDLINE

DN 21417216 PubMed ID: 11526086

TI CPEB phosphorylation and cytoplasmic polyadenylation are catalyzed by the kinase IAK1/Eg2 in maturing mouse oocytes.

AU Hodgman R; Tay J; Mendez R; Richter J D

CS Department of Molecular Genetics and Microbiology, University of Massachusetts Medical School, Worcester, MA 01605, USA.

NC HD07349 (NICHD)  
HD37267 (NICHD)

SO DEVELOPMENT, (2001 Jul) 128 (14) 2815-22.  
Journal code: 8701744. ISSN: 0950-1991.

CY England: United Kingdom

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 200110

ED Entered STN: 20010830  
Last Updated on STN: 20020420  
Entered Medline: 20011011

AB In both vertebrates and invertebrates, the expression of several maternal mRNAs is regulated by cytoplasmic polyadenylation. In *Xenopus* oocytes, where most of the biochemical details of this process have been examined, polyadenylation is controlled by CPEB, a sequence-specific RNA binding protein. The activity of CPEB, which is to recruit cleavage and polyadenylation specificity factor (CPSF) and poly(A) polymerase (PAP) into an active cytoplasmic polyadenylation complex, is controlled by Eg2-catalyzed phosphorylation. Soon after CPEB phosphorylation and resulting polyadenylation take place, the interaction between maskin, a CPEB-associated factor, and eIF4E, the cap-binding protein, is destroyed, which results in the recruitment of mRNA into **polysomes**. Polyadenylation also occurs in maturing mouse oocytes, although the biochemical events that govern the reaction in these cells are not known.

In this study, we have examined the phosphorylation of CPEB and have assessed the necessity of this protein for polyadenylation in maturing mouse oocytes. Immunohistochemistry has revealed that all the factors that control polyadenylation and translation in *Xenopus* oocytes (CPEB, CPSF, PAP, maskin, and IAK1, the murine homologue of Eg2) are also present in the cytoplasm of mouse oocytes. After the induction of maturation, a kinase is activated that phosphorylates CPEB on a critical regulatory residue, an event that is essential for CPEB activity. A peptide that competitively inhibits the activity of IAK1/Eg2 blocks the progression of meiosis in injected oocytes. Finally, a CPEB protein that acts as a dominant negative mutation because it cannot be phosphorylated by IAK1/Eg2, prevents cytoplasmic polyadenylation. These data indicate that cytoplasmic polyadenylation in mouse oocytes is mediated by IAK1/Eg2-catalyzed phosphorylation of CPEB.

L2 ANSWER 10 OF 40 MEDLINE on STN  
AN 2001644672 MEDLINE  
DN 21554460 PubMed ID: 11697145  
TI Characterisation of a cDNA encoding chick eukaryotic translation initiation factor-2 beta.  
AU Sneesby K J; Crane D I; Murrell W G  
CS School of Biomolecular and Biomedical Science, Griffith University, Nathan, Brisbane, Queensland 4111, Australia.  
SO DNA SEQUENCE, (2001 Jul) 12 (1) 59-65.  
Journal code: 9107800. ISSN: 1042-5179.  
CY Switzerland  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
OS GENBANK-AJ294707  
EM 200203  
ED Entered STN: 20011108  
Last Updated on STN: 20020305  
Entered Medline: 20020304  
AB A full length cDNA for the beta subunit of chick (*Gallus gallus*) eukaryotic translation initiation factor-2 is described. This cDNA was isolated by screening a chick cDNA library with a probe derived via differential display of developing chick heart tissue. Up-regulated expression of eIF-2 beta mRNA was confirmed by reverse Northern dot blot analysis. eIF-2 beta, together with eIF-2 alpha and eIF-2 gamma, comprise subunits of a complex that promotes the binding of methionyl-tRNA to **ribosomes** during the initiation of protein translation. The nucleotide sequence of the chick eIF-2 beta cDNA predicts a protein of 334 amino acids that has 95%, 93%, 56% and 37% sequence identity with rabbit, human, drosophila and yeast eIF-2 beta, respectively. The deduced eIF-2 beta protein contains a number of functional motifs and domains consistent with the putative function of this protein; these include a potential **C2-C2 zinc-finger** binding domain, three polylysine regions, and three acidic regions.  
  
L2 ANSWER 11 OF 40 MEDLINE on STN  
AN 2003317482 IN-PROCESS  
DN 22730813 PubMed ID: 11570975  
TI Itt1p, a novel protein inhibiting translation termination in *Saccharomyces cerevisiae*.  
AU Urakov V N; Valouev I A; Lewitin E I; Paushkin S V; Kosorukov V S; Kushnirov V V; Smirnov V N; Ter-Avanesyan M D  
CS Institute of Experimental Cardiology, Cardiology Research Center, Moscow, 121552, Russia.. ter@cardio.ru  
SO BMC Mol Biol, (2001) 2 (1) 9.  
Journal code: 100966983.  
CY England: United Kingdom  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English

FS IN-PROCESS; NONINDEXED  
ED Entered STN: 20030709  
Last Updated on STN: 20030709  
AB BACKGROUND: Termination of translation in eukaryotes is controlled by two interacting polypeptide chain release factors, eRF1 and eRF3. eRF1 recognizes nonsense codons UAA, UAG and UGA, while eRF3 stimulates polypeptide release from the **ribosome** in a GTP- and eRF1 - dependent manner. Recent studies has shown that proteins interacting with these release factors can modulate the efficiency of nonsense codon readthrough. RESULTS: We have isolated a nonessential yeast gene, which causes suppression of nonsense mutations, being in a multicopy state. This gene encodes a protein designated Itt1p, possessing a **zinc finger** domain characteristic of the TRIAD proteins of higher eukaryotes. Overexpression of Itt1p decreases the efficiency of translation termination, resulting in the readthrough of all three types of nonsense codons. Itt1p interacts in vitro with both eRF1 and eRF3. Overexpression of eRF1, but not of eRF3, abolishes the nonsense suppressor effect of overexpressed Itt1p. CONCLUSIONS: The data obtained demonstrate that Itt1p can modulate the efficiency of translation termination in yeast. This protein possesses a **zinc finger** domain characteristic of the TRIAD proteins of higher eukaryotes, and this is a first observation of such protein being involved in translation.

L2 ANSWER 12 OF 40 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
AN 2002:387486 BIOSIS  
DN PREV200200387486  
TI Itt1p, a novel protein inhibiting translation termination in *Saccharomyces cerevisiae*.  
AU Urakov, Valery N.; Valouev, Igor A.; Lewitin, Eugeny I.; Paushkin, Sergey V.; Kosorukov, Vyacheslav S.; Kushnirov, Vitaly V.; Smirnov, Vladimir N.; Ter-Avanesyan, Michael D. (1)  
CS (1) Cardiology Research Center, Institute of Experimental Cardiology, Moscow, 121552: molgen@cardio.ru, elewitin@hotmail.com, paushkin@hhmi.apenn.edu, vita@cardio.ru, yakusheva@cardio.ru, ter@cardio.ru Russia  
SO BMC Molecular Biology, (August 24, 2001) Vol. 2, No. 9 Cited April 30, 2002, pp. 1-10. <http://www.biomedcentral.com/content/pdf/1471-2199-2-9.pdf> cited June 27, 2002 <http://www.biomedcentral.com/1471-2199>. online.  
ISSN: 1471-2199.  
DT Article  
LA English  
AB Background: Termination of translation in eukaryotes is controlled by two interacting polypeptide chain release factors, eRF1 and eRF3. eRF1 recognizes nonsense codons UAA, UAG and UGA, while eRF3 stimulates polypeptide release from the **ribosome** in a GTP- and eRF1 dependent manner. Recent studies has shown that proteins interacting with these release factor scan modulate the efficiency of nonsense codon read through. Results: We have isolated a nonessential yeast gene, which causes suppression of nonsense mutations, being in a multicopy state. This gene encodes a protein designated Itt1p, possessing azinc finger domain characteristic of the TRIAD proteins of higher eukaryotes. Overexpression of Itt1p decreases the efficiency of translation termination, resulting in the read through of all three types of nonsense codons. Itt1p interacts in vitro with both eRF1 and eRF3. Overexpression of eRF1, but not of eRF3, abolishes the nonsense suppressor effect of overexpressed Itt1p. Conclusions: The data obtained demonstrate that Itt1p can modulate the efficiency of translation termination in yeast. This protein possesses a **zinc finger** domain characteristic of the TRIAD proteins of higher eukaryotes, and this is a first observation of such protein being involved in translation.

L2 ANSWER 13 OF 40 MEDLINE on STN  
AN 2000076389 MEDLINE  
DN 20076389 PubMed ID: 10607896

TI cDNA cloning and developmental expression of cellular nucleic acid-binding protein (CNBP) gene in *Xenopus laevis*.  
AU De Dominicis A; Lotti F; Pierandrei-Amaldi P; Cardinali B  
CS Istituto di Biologia Cellulare, CNR, Viale Marx 43, 00137, Rome, Italy.  
SO GENE, (2000 Jan 4) 241 (1) 35-43.  
Journal code: 7706761. ISSN: 0378-1119.  
CY Netherlands  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 200002  
ED Entered STN: 20000314  
Last Updated on STN: 20000314  
Entered Medline: 20000228  
AB The cloning and sequencing of a cDNA corresponding to one of the two *Xenopus* cellular nucleic acid binding protein (CNBP) genes are presented. Comparison of this cDNA sequence (xCNBP2) with the other previously reported (xCNBP1) reveals that, while the cDNA sequences are somewhat divergent, the amino acid sequences are mostly unchanged. It has been determined that both gene copies can generate a shorter transcript, likely due to alternative splicing, as previously demonstrated in human cells. The comparison of the cDNA sequences of *Xenopus* and of other species shows that the missing cDNA tract of *Xenopus* does not coincide with the others, consistent with the utilization of different splicing donor sites. The two gene copies are expressed at comparable levels, since the two corresponding mRNAs are similarly represented both in oocyte and embryo poly(A) (+) RNA. However, the shorter CNBP transcripts are slightly less represented than the longer CNBP transcripts, in both the oocyte and embryo. CNBP mRNA accumulation during development decreases before the mid-blastula stage and increases again thereafter. The polysome association of CNBP mRNA and the binding activity of CNBP to its target sequence of ribosomal protein mRNA 5'UTR have been analysed during development.

L2 ANSWER 14 OF 40 MEDLINE on STN DUPLICATE 5  
AN 1999455044 MEDLINE  
DN 99455044 PubMed ID: 10523676  
TI Molecular architecture of the mouse DNA polymerase alpha-primase complex.  
AU Mizuno T; Yamagishi K; Miyazawa H; Hanaoka F  
CS The Institute of Physical Research (RIKEN), Wako, Saitama 351-0198, Japan.  
SO MOLECULAR AND CELLULAR BIOLOGY, (1999 Nov) 19 (11) 7886-96.  
Journal code: 8109087. ISSN: 0270-7306.  
CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 199911  
ED Entered STN: 20000111  
Last Updated on STN: 20000111  
Entered Medline: 19991124  
AB The DNA polymerase alpha-primase complex is the only enzyme that provides RNA-DNA primers for chromosomal DNA replication in eukaryotes. Mouse DNA polymerase alpha has been shown to consist of four subunits, p180, p68, p54, and p46. To characterize the domain structures and subunit requirements for the assembly of the complex, we constructed eukaryotic polycistronic cDNA expression plasmids expressing pairwise the four subunits of DNA polymerase alpha. In addition, the constructs contained an internal **ribosome** entry site derived from poliovirus. The constructs were transfected in different combinations with vectors expressing single subunits to allow the simultaneous expression of three or four of the subunits in cultured mammalian cells. We demonstrate that the carboxyl-terminal region of p180 (residues 1235 to 1465) is essential for its interaction with both p68 and p54-p46 by immunohistochemical analysis and coprecipitation studies with antibodies. Mutations in the

putative zinc fingers present in the carboxyl terminus of p180 abolished the interaction with p68 completely, although the mutants were still capable of interacting with p54-p46. Furthermore, the amino-terminal region (residues 1 to 329) and the carboxyl-terminal region (residues 1280 to 1465) were revealed to be dispensable for DNA polymerase activity. Thus, we can divide the p180 subunit into three domains. The first is the amino-terminal domain (residues 1 to 329), which is dispensable for both polymerase activity and subunit assembly. The second is the minimal core domain (residues 330 to 1279), required for polymerase activity. The third is the carboxyl-terminal domain (residues 1280 to 1465), which is dispensable for polymerase activity but required for the interaction with the other three subunits. Taken together, these results allow us to propose the first structural model for the DNA polymerase alpha-primase complex in terms of subunit assembly, domain structure, and stepwise formation at the cellular level.

L2 ANSWER 15 OF 40 MEDLINE on STN DUPLICATE 6  
AN 2000025766 MEDLINE  
DN 20025766 PubMed ID: 10556305  
TI A novel RNA-binding nuclear protein that interacts with the fragile X mental retardation (FMR1) protein.  
AU Bardoni B; Schenck A; Mandel J L  
CS Institut de Genetique et de Biologie Moleculaire et Cellulaire,  
CNRS/INSERM/ULP, BP 163, 67404 Illkirch Cedex, CU de Strasbourg, France..  
bardoni@igbmc.u-strasbg.fr  
SO HUMAN MOLECULAR GENETICS, (1999 Dec) 8 (13) 2557-66.  
Journal code: 9208958. ISSN: 0964-6906.  
CY ENGLAND: United Kingdom  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
OS GENBANK-AF159548; GENBANK-AF159549  
EM 200001  
ED Entered STN: 20000204  
Last Updated on STN: 20000204  
Entered Medline: 20000124  
AB Silenced expression of the FMR1 gene is responsible for the fragile X syndrome. The FMR1 gene codes for an RNA binding protein (FMRP), which can shuttle between the nucleus and the cytoplasm and is found associated to polysomes in the cytoplasm. By two-hybrid assay in yeast, we identified a novel protein interacting with FMRP: nuclear FMRP interacting protein (NUFIP). NUFIP mRNA expression is strikingly similar to that of the FMR1 gene in neurones of cortex, hippocampus and cerebellum. At the subcellular level, NUFIP colocalizes with nuclear isoforms of FMRP in a dot-like pattern. NUFIP presents a C2H2 zinc finger motif and a nuclear localization signal, but has no homology to known proteins and shows RNA binding activity in vitro. NUFIP does not interact with the FMRP homologues encoded by the FXR1 and FXR2 genes. Thus, these results indicate a specific nuclear role for FMRP.

L2 ANSWER 16 OF 40 MEDLINE on STN DUPLICATE 7  
AN 2000057855 MEDLINE  
DN 20057855 PubMed ID: 10588896  
TI The contribution of a zinc finger motif to the function of yeast ribosomal protein YL37a.  
AU Rivlin A A; Chan Y L; Wool I G  
CS Department of Biochemistry and Molecular Biology, The University of Chicago, Chicago, IL 60637, USA.  
NC GM21769 (NIGMS)  
SO JOURNAL OF MOLECULAR BIOLOGY, (1999 Dec 10) 294 (4) 909-19.  
Journal code: 2985088R. ISSN: 0022-2836.  
CY ENGLAND: United Kingdom  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English

FS Priority Journals  
• EM 200001  
ED Entered STN: 20000124  
Last Updated on STN: 20000124  
Entered Medline: 20000107  
AB Eukaryotic ribosomes have a large number of proteins but the exact nature of their contribution to the structure and to the function of the particle is not known. Of the 78 proteins in yeast **ribosomes**, six have **zinc finger** motifs of the C2-C2 variety. Both genes encoding the essential yeast ribosomal protein YL37a, which has such a **zinc finger** motif, were disrupted. The double deletion, which is lethal, can be rescued with a plasmid-encoded copy of a YL37a gene. Mutations were constructed in a plasmid-encoded copy of YL37a; the mutations caused the cysteine residues in the motif (at positions 39, 42, 57 and 60) to be replaced, one at a time, with serine. The cysteine residue at position 39, the first of the four in the motif, is essential for the function of YL37a, since a C39S mutation did not complement the null phenotype. However, plasmids encoding variants with C42S, C57S, or C60S mutations in the **zinc finger** motif were able to rescue the null mutant. YL37a binds zinc, but none of the mutant proteins, C39S, C42S, C57S, or C60S, was able to bind the metal. Thus, all four cysteine residues are essential for the binding of zinc; only one, C39, is essential for the function of the ribosomal protein.  
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L2 ANSWER 17 OF 40 MEDLINE on STN DUPLICATE 8  
AN 1998241715 MEDLINE  
DN 98241715 PubMed ID: 9573244  
TI The p95 gene of *Bombyx mori* nuclear polyhedrosis virus: temporal expression and functional properties.  
AU Lu M; Swevers L; Iatrou K  
CS Department of Medical Biochemistry, The University of Calgary, Calgary, Alberta T2N 4N1, Canada.  
SO JOURNAL OF VIROLOGY, (1998 Jun) 72 (6) 4789-97.  
Journal code: 0113724. ISSN: 0022-538X.  
CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
OS GENBANK-U83330  
EM 199805  
ED Entered STN: 19980609  
Last Updated on STN: 20000303  
Entered Medline: 19980527  
AB As part of our effort to identify baculovirus proteins acting as transcriptional regulators, we have characterized a gene, p95, of *Bombyx mori* nuclear polyhedrosis virus (BmNPV) that encompasses an open reading frame for a putative 95-kDa polypeptide (P95). The N-terminal half of the conceptually translated P95 contains two **zinc finger**-type DNA-binding motifs, and its C terminus contains a proline-rich region reminiscent of transcriptional activation regions. Northern blot analysis indicates that two mRNA species, 3.5 and 1.7 kb in size, are transcribed from the p95 gene at different times postinfection. These two mRNA species are produced by differential polyadenylation site usage. While the longer transcript can encode the P95 protein, the shorter one may encode a prematurely terminated version of the P95 polypeptide produced by **ribosome frameshifting** occurring at heptanucleotide "slippage" sites located near the relevant polyadenylation site. Transcription of the p95 gene is initiated at a proximal site located 70 nucleotides upstream of the translation start codon of P95, a middle site located 170 nucleotides from the start codon, and a set of three closely spaced distal sites located 385, 390, and 409 nucleotides from the translation start codon. The middle and distant initiation sites are utilized before and after BmNPV DNA replication, while transcripts

initiated at the proximal site occur largely during the late and very late stages of viral infection. Transient-expression assays indicate that P95 can stimulate gene expression driven by the promoter of its own gene and the promoter of the cytoplasmic actin gene of *B. mori*. The P95-mediated trans activation can be further augmented by BmIE1, an immediate-early gene product of BmNPV. In contrast to the case with the actin promoter, however, the promoter of the p95 gene can be trans activated by the product of its own gene only in the presence of BmIE1. Our data suggest that proteins P95 and BmIE1 of BmNPV and, by analogy, those of other baculoviruses may interact with each other and synergize to potentiate transcription.

L2 ANSWER 18 OF 40 MEDLINE on STN  
AN 1998216743 MEDLINE  
DN 98216743 PubMed ID: 9557665  
TI Two RING finger proteins, the oncoprotein PML and the arenavirus Z protein, colocalize with the nuclear fraction of the ribosomal P proteins.  
AU Borden K L; Campbellwyer E J; Carlile G W; Djavani M; Salvato M S  
CS Department of Biochemistry, Dalhousie University, Halifax, Nova Scotia, Canada.. kathyb@inka.mssm.edu  
NC R29 AI25522 (NIAID)  
R01 AI32107 (NIAID)  
SO JOURNAL OF VIROLOGY, (1998 May) 72 (5) 3819-26.  
Journal code: 0113724. ISSN: 0022-538X.  
CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 199805  
ED Entered STN: 19980529  
Last Updated on STN: 19980529  
Entered Medline: 19980520  
AB The promyelocytic leukemia (PML) protein forms nuclear bodies which are relocated to the cytoplasm by the RNA virus lymphocytic choriomeningitis virus (LCMV). The viral Z protein directly binds to PML and can relocate the nuclear bodies. Others have observed that LCMV virions may contain ribosomes; hence, we investigated the effects of infection on the distribution of ribosomal P proteins (P0, P1, and P2) with PML as a reference point. We demonstrate an association of PML bodies with P proteins by indirect immunofluorescence and coimmunoprecipitation experiments, providing the first evidence of nucleic acid-binding proteins associated with PML bodies. We show that unlike PML, the P proteins are not redistributed upon infection. Immunofluorescence and coimmunoprecipitation studies indicate that the viral Z protein binds the nuclear, but not the cytoplasmic, fraction of P0. The nuclear fraction of P0 has been associated with translationally coupled DNA excision repair and with nonspecific endonuclease activity; thus, P0 may be involved in nucleic acid processing activities necessary for LCMV replication. During the infection process, PML, P1, and P2 are downregulated but P0 remains unchanged. Further, P0 is present in virions while PML is not, indicating some selectivity in the assembly of LCMV.

L2 ANSWER 19 OF 40 MEDLINE on STN DUPLICATE 9  
AN 1999053157 MEDLINE  
DN 99053157 PubMed ID: 9836437  
TI The characterization of two *Dictyostelium discoideum* genes encoding ribosomal proteins with sequence similarity to rat L27a and L37a.  
AU Ohmachi T; Fukuoka R; Kimura Y; Asada Y; Ennis H L  
CS Department of Biochemistry and Biotechnology, Faculty of Agriculture and Life Science, Hirosaki University, Japan.. tohmachi@owani8.cc.hirosaki-u.ac.jp  
SO BIOSCIENCE, BIOTECHNOLOGY, AND BIOCHEMISTRY, (1998 Oct) 62 (10) 2008-15.  
Journal code: 9205717. ISSN: 0916-8451.  
CY Japan

DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 199901  
ED Entered STN: 19990115  
Last Updated on STN: 19990115  
Entered Medline: 19990107  
AB Two *Dictyostelium discoideum* ribosomal protein genes, denoted DdL27a and DdL37a, were isolated and sequenced. The DdL27a gene contained an open reading frame of 148 amino acids coding for a putative 16,407 Da protein, which was similar to rat L27a (82.6% similarity) and to ribosomal proteins from other species. The gene contained a 311-bp intron downstream from the ATG initiation codon with an A+T content of 75%. The DdL37a gene encoded a 9,999 Da protein consisting of 91 amino acids, which had high sequence similarity to rat, human, and chicken ribosomal protein L37a, and was interrupted by two introns of 254 bp and 75 bp in length. The DdL37a protein contained a typical **zinc finger** motif (Cys-X2-Cys-X14-Cys-X2-Cys), which may be involved in the interaction of proteins with nucleic acids. Genomic DNA blot analysis indicated that the DdL27a and DdL37a genes are present in single copies in the *Dictyostelium* haploid genome. The DdL27a and DdL37a mRNA were expressed maximally in growing amoebae, and their levels decreased during multicellular development, coordinately with the observed decrease in **ribosome** accumulation during later development.

L2 ANSWER 20 OF 40 MEDLINE on STN DUPLICATE 10  
AN 1998177161 MEDLINE  
DN 98177161 PubMed ID: 9508766  
TI ncl-1 is required for the regulation of cell size and ribosomal RNA synthesis in *Caenorhabditis elegans*.  
AU Frank D J; Roth M B  
CS Division of Basic Sciences and Molecular and Cellular Biology Program,  
Fred Hutchinson Cancer Research Center, Seattle, Washington 98109, USA.  
NC GM48534-01A2 (NIGMS)  
SO JOURNAL OF CELL BIOLOGY, (1998 Mar 23) 140 (6) 1321-9.  
Journal code: 0375356. ISSN: 0021-9525.  
CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
OS GENBANK-AF047027  
EM 199804  
ED Entered STN: 19980430  
Last Updated on STN: 20000303  
Entered Medline: 19980420  
AB Regulation of **ribosome** synthesis is an essential aspect of growth control. Thus far, little is known about the factors that control and coordinate these processes. We show here that the *Caenorhabditis elegans* gene ncl-1 encodes a **zinc finger** protein and may be a repressor of RNA polymerase I and III transcription and an inhibitor of cell growth. Loss of function mutations in ncl-1, previously shown to result in enlarged nucleoli, result in increased rates of rRNA and 5S RNA transcription and enlarged cells. Furthermore, ncl-1 adult worms are larger, have more protein, and have twice as much rRNA as wild-type worms. Localization studies show that the level of NCL-1 protein is independently regulated in different cells of the embryo. In wild-type embryos, cells with the largest nucleoli have the lowest level of NCL-1 protein. Based on these results we propose that ncl-1 is a repressor of **ribosome** synthesis and cell growth.

L2 ANSWER 21 OF 40 MEDLINE on STN DUPLICATE 11  
AN 1998220306 MEDLINE  
DN 98220306 PubMed ID: 9559550  
TI Heat shock transiently enhances the synthesis rate of Sis1p, a

ribosome-associated DnaJ protein in the oleagenous yeast  
Apotrichum curvatum.

AU Specht V; Lubeck M; Kindl H  
CS Fachbereich Chemie, Philipps-Universitat, Marburg, Germany.  
SO YEAST, (1998 Mar 30) 14 (5) 419-30.  
Journal code: 8607637. ISSN: 0749-503X.  
CY ENGLAND: United Kingdom  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
OS GENBANK-Y12079; GENBANK-Y12080  
EM 199806  
ED Entered STN: 19980625  
Last Updated on STN: 19980625  
Entered Medline: 19980617

AB DnaJ proteins have been localized in different intracellular compartments of eukaryotes. In Apotrichum curvatum, a fat-storing yeast, we found a DnaJ homolog associated with **ribosomes** and large cytosolic complexes as well. Using a plant DnaJ probe and a cDNA library constructed from poly(A) (+)-RNA of A. curvatum grown on oleate we isolated a SIS1 cDNA coding for a 39.5 kDa protein. The putative protein contains neither a **zinc finger** motif nor a CAAX motif but is characterized by a J-domain at the N-terminal region and a large G-rich region in the middle part of the molecule. Heat shock applied for 1 h resulted in a pronounced but transient increase of the SIS1 mRNA. An antiserum was raised against the bacterially expressed protein. Cell fractions from A. curvatum were further separated by sedimentation centrifugation on sucrose gradients. Analysing the sub-fractions, we detected Sis1p mainly associated with **ribosomes**, and with particles sedimenting at approximately 200S. Hsp70 was found to be associated with the 200S fraction. The respective cytosolic A. curvatum Hsp70 cDNA was cloned and sequenced. High salt conditions caused the removal of Hsp70 and Sis1p from the 200S complexes. Mild RNase treatment of the 200S fraction afforded monosomes and 200S complexes unaffected by RNase. Heat shock led to a pronounced increase in the rate of de novo synthesis. However, due to the large pools of Sis1p on **ribosomes** and large cytosolic complexes, the increase in gene activation did not lead to a significant change of the total amount of Sis1p.

L2 ANSWER 22 OF 40 MEDLINE on STN DUPLICATE 12  
AN 1998327781 MEDLINE  
DN 98327781 PubMed ID: 9657951  
TI Genes and regulatory sites of the "host-takeover module" in the terminal redundancy of *Bacillus subtilis* bacteriophage SPO1.  
AU Stewart C R; Gaslightwala I; Hinata K; Krolikowski K A; Needleman D S; Peng A S; Peterman M A; Tobias A; Wei P  
CS Department of Biochemistry and Cell Biology, Rice University, Houston, Texas 77251-1892, USA.. crs@bioc.rice.edu  
SO VIROLOGY, (1998 Jul 5) 246 (2) 329-40.  
Journal code: 0110674. ISSN: 0042-6822.  
CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
OS GENBANK-AF031901  
EM 199808  
ED Entered STN: 19980817  
Last Updated on STN: 19980817  
Entered Medline: 19980805

AB Early in infection of *Bacillus subtilis* by bacteriophage SPO1, the synthesis of most host-specific macromolecules is replaced by the corresponding phage-specific biosyntheses. It is believed that this subversion of the host biosynthetic machinery is accomplished primarily by a cluster of early genes in the SPO1 terminal redundancy. Here we analyze

the nucleotide sequence of this 11.5-kb "host-takeover module," which appears to be designed for particularly efficient expression. Promoters, ribosome-binding sites, and codon usage statistics all show characteristics known to be associated with efficient function in *B. subtilis*. The promoters and ribosome-binding sites have additional conserved features which are not characteristic of their host counterparts and which may be important for competition with host genes for the cellular biosynthetic machinery. The module includes 24 genes, tightly packed into 12 operons driven by the previously identified early promoters PE1 to PE12. The genes are smaller than average, with half of them having fewer than 100 codons. Most of their inferred products show little similarity to known proteins, although zinc finger, trans-membrane, and RNA polymerase-binding domains were identified. Transcription-termination and RNase III cleavage sites were found at appropriate locations.

L2 ANSWER 23 OF 40 MEDLINE on STN DUPLICATE 13  
AN 97413835 MEDLINE  
DN 97413835 PubMed ID: 9268371  
TI Specific interactions of the autoantigen L7 with multi-zinc finger protein ZNF7 and ribosomal protein S7.  
AU Witte S; Krawinkel U  
CS Fakultat fur Biologie, Universitat Konstanz, Postfach 5560, 78434 Konstanz, Germany.. stephan.witte@uni-konstanz.de  
SO JOURNAL OF BIOLOGICAL CHEMISTRY, (1997 Aug 29) 272 (35) 22243-7.  
Journal code: 2985121R. ISSN: 0021-9258.  
CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 199710  
ED Entered STN: 19971013  
Last Updated on STN: 19971013  
Entered Medline: 19971002  
AB The eucaryotic protein L7, which associates with the large subunit of ribosomes, has been shown to be a major autoantigen in systemic autoimmune arthritis. The N terminus carries a sequence motif that is similar to the leucine zipper domain of eucaryotic transcription factors. This domain promotes the homodimerization of protein L7 through alpha-helical coiled-coil formation and binds to distinct mRNAs, thereby inhibiting their cell-free translation. Using a yeast two-hybrid selection, we have identified from a Jurkat T lymphoma cDNA library ribosomal protein S7 and the multi-zinc finger protein ZNF7 as proteins that interact with protein L7. A fragment of L7 carrying the leucine zipper-like domain is fully sufficient to mediate these interactions. Their potential biological significance is indicated by low apparent dissociation constants of S7-L7 ( $15 \times 10(-9)$  M) and, respectively, ZNF7-L7 ( $2 \times 10(-9)$  M) complexes and co-immunoprecipitation of proteins S7, ZNF7, and L7 from a cell lysate with an anti-L7 antibody. We also show that ZNF7-like L7 and S7 can exist in a ribosome-bound form. This study provides further evidence suggesting that L7 is involved in translational regulation through interactions with components of the translational apparatus.

L2 ANSWER 24 OF 40 MEDLINE on STN  
AN 97299690 MEDLINE  
DN 97299690 PubMed ID: 9154839  
TI Roklp is a putative RNA helicase required for rRNA processing.  
AU Venema J; Bousquet-Antonelli C; Gelugne J P; Caizeragues-Ferrer M; Tollervy D  
CS European Molecular Biology Laboratory, Heidelberg, Germany.. venema@chem.vu.nl  
SO MOLECULAR AND CELLULAR BIOLOGY, (1997 Jun) 17 (6) 3398-407.  
Journal code: 8109087. ISSN: 0270-7306.

CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 199706  
ED Entered STN: 19970630  
Last Updated on STN: 20030311  
Entered Medline: 19970619  
AB The synthesis of **ribosomes** involves many small nucleolar ribonucleoprotein particles (snoRNPs) as transacting factors. Yeast strains lacking the snoRNA, snR10, are viable but are impaired in growth and delayed in the early pre-rRNA cleavages at sites A0, A1, and A2, which lead to the synthesis of 18S rRNA. The same cleavages are inhibited by genetic depletion of the essential snoRNP protein Gar1p. Screens for mutations showing synthetic lethality with deletion of the SNR10 gene or with a temperature-sensitive gar1 allele both identified the ROK1 gene, encoding a putative, ATP-dependent RNA helicase of the DEAD-box family. The ROK1 gene is essential for viability, and depletion of Rok1p inhibits pre-rRNA processing at sites A0, A1, and A2, thereby blocking 18S rRNA synthesis. Indirect immunofluorescence by using a ProtA-Rok1p construct shows the protein to be predominantly nucleolar. These results suggest that Rok1p is required for the function of the snoRNP complex carrying out the early pre-rRNA cleavage reactions.

L2 ANSWER 25 OF 40 MEDLINE on STN DUPLICATE 14  
AN 97363215 MEDLINE  
DN 97363215 PubMed ID: 9219540  
TI Post-translational processing of rat ribosomal proteins. Ubiquitous methylation of Lys22 within the **zinc-finger** motif of RL40 (carboxy-terminal extension protein 52) and tissue-specific methylation of Lys4 in RL29.  
AU Williamson N A; Raliegh J; Morrice N A; Wettenhall R E  
CS Russell Grimwade School of Biochemistry and Molecular Biology, University of Melbourne, Australia.  
SO EUROPEAN JOURNAL OF BIOCHEMISTRY, (1997 Jun 15) 246 (3) 786-93.  
Journal code: 0107600. ISSN: 0014-2956.  
CY GERMANY: Germany, Federal Republic of  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 199708  
ED Entered STN: 19970825  
Last Updated on STN: 19970825  
Entered Medline: 19970814  
AB The complete amino acid sequences of rat and yeast (*Saccharomyces cerevisiae*) ribosomal proteins derived from precursors containing an N-terminal ubiquitin or ubiquitin-like sequence (C-terminal extension proteins or CEPs) were determined and investigated for any post-translational modifications by reverse-phase HPLC purification, direct amino acid sequence and mass spectrometric analyses. Covalent modifications were detected in the rat liver proteins RS27a (CEP-80), RL29, RL37 and RL40 (CEP-52), while RS30 (CEP), RL36a, RL39 and RL41 were unmodified. Heterogeneity of RS27a was due to C-terminal truncations, with Lys80 missing from about 20% of the liver RS27a population; C-terminal processing was also detected with RL29 and RL37. No other covalent modifications of liver, brain or thymus RS27a were detected. The rat RL40 structure was identical to the cDNA-predicted sequence except for complete stoichiometric N epsilon-trimethylation of Lys22 within its **zinc-finger** motif; this modification occurred in the **ribosomes** of all three rat tissues investigated but not in yeast **ribosomes**. The methylation characteristics of RL40 were distinct from those of ribosomal protein RL29 in the rat, which was differentially monomethylated at Lys4 in the liver, brain and thymus (27%, > 99% and 95% methylation, respectively). In the case of liver, there was no

appreciable difference in the RL29 methylation status of free and membrane-bound **ribosomes**. The possibilities of an essential role for RL40 methylation in the formation of rat **ribosomes**, and a distinct regulatory role for RL29 methylation in the rat, are discussed.

L2 ANSWER 26 OF 40 MEDLINE on STN  
AN 1998067354 MEDLINE  
DN 98067354 PubMed ID: 9404850  
TI Differential expression of metallopanstimulin/S27 ribosomal protein in melanocytic lesions of the skin.  
AU Santa Cruz D J; Hamilton P D; Klos D J; Fernandez-Pol J A  
CS Department of Pathology and Laboratory Medicine, Saint John's Mercy Medical Center, Washington University, St. Louis, Missouri, USA.  
SO JOURNAL OF CUTANEOUS PATHOLOGY, (1997 Oct) 24 (9) 533-42. Ref: 50  
Journal code: 0425124. ISSN: 0303-6987.  
CY Denmark  
DT Journal; Article; (JOURNAL ARTICLE)  
General Review; (REVIEW)  
(REVIEW LITERATURE)  
LA English  
FS Priority Journals  
EM 199801  
ED Entered STN: 19980129  
Last Updated on STN: 19980129  
Entered Medline: 19980112  
AB We have previously shown that human metallopanstimulin (MPS-1) is a ubiquitous 9.4-kDa multifunctional ribosomal S27/nuclear "zinc finger" protein which is expressed at high levels in a wide variety of cultured proliferating cells and tumor tissues, including melanoma. In the present study, we have examined the expression of the MPS-1 protein in various types of human benign and malignant melanocytic lesions of the skin. The expression of the MPS-1 protein was studied by immunohistochemistry using specific anti-MPS-1 antibodies. We found that in benign nevi, the staining is weak and in a gradient; most often, only type A melanocytes stain positive. The B and particularly the C types are negative. Remarkably, congenital nevi show a similar gradient staining of regular benign nevi, but in addition one example showed intensely positive dermal nodules adjacent to areas of negative melanocytes. In melanomas, the staining patterns for MPS-1 are more complex. While some melanomas stain evenly and intensely positive, others have remarkably variable expression of MPS-1. The scattered melanocytes migrating to the upper layers of the epidermis are usually intensely positive. In summary, benign lesions stain in an orderly pattern with staining gradients that correlate with the cellular differentiation of the nevi. Malignant melanomas have an erratic, often intense staining that also correlates with the disorderly growth of these neoplasms. These differential results indicate that the MPS-1 antigen is a useful marker for melanocytic lesions at the immunohistochemical level.

L2 ANSWER 27 OF 40 MEDLINE on STN  
AN 97338480 MEDLINE  
DN 97338480 PubMed ID: 9195040  
TI Molecular characterization of the prokaryotic efp gene product involved in a peptidyltransferase reaction.  
AU Aoki H; Adams S L; Turner M A; Ganoza M C  
CS Banting and Best Department of Medical Research, University of Toronto, Ontario, Canada.  
SO BIOCHIMIE, (1997) 79 (1) 7-11.  
Journal code: 1264604. ISSN: 0300-9084.  
CY France  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 199708

ED Entered STN: 19970825  
Last Updated on STN: 19980206  
Entered Medline: 19970812

AB The translation factor EF-P is required for efficient prokaryotic peptide bond synthesis on 70S ribosomes from fMet-tRNAAfMet. This protein has been purified from Escherichia coli cells and the gene, efp, encoding it has been cloned and sequenced. We have isolated recombinant clones which overexpress a protein that co-migrates with purified EF-P upon SDS-PAGE analysis. Using these clones, we report the purification, crystallization and initial characterization of the efp gene product. The mechanism by which EF-P stimulates peptide-bond synthesis was studied using several antibiotics that inhibit translocation, peptide-bond synthesis and decoding. The stimulation of peptidyltransferase by EF-P was not inhibited by antibiotics that affect translocation and occupation of the A site (in the elongation state), ie thiostrepton, viomycin, neomycin and fusidic acid but was inhibited by streptomycin as well as by inhibitors of peptidyltransferase, chloramphenicol and lincomycin. This observation and the requirement for L16 but not for the L7/L12 nor L6 or L11 r-proteins suggest that the binding site for EF-P may overlap the peptidyltransferase center of the ribosome.

L2 ANSWER 28 OF 40 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
AN 1996:495084 BIOSIS  
DN PREV199699217440

TI The zinc finger phosphoprotein ETO and the ribosomal phosphoprotein P2 localize to ribosomes primarily in spine synapses in the adult rodent brain.

AU Lasher, R. S.; Erickson, P. F.  
CS Dep. C and S Biol., Univ. Colorado Med. Sch., Denver, CO 80262 USA  
SO Society for Neuroscience Abstracts, (1996) Vol. 22, No. 1-3, pp. 383.  
Meeting Info.: 26th Annual Meeting of the Society for Neuroscience Washington, D.C., USA November 16-21, 1996  
ISSN: 0190-5295.

DT Conference  
LA English

L2 ANSWER 29 OF 40 MEDLINE on STN DUPLICATE 15  
AN 96003638 MEDLINE  
DN 96003638 PubMed ID: 7556101

TI Protein-rRNA binding features and their structural and functional implications in ribosomes as determined by cross-linking studies.

AU Urlaub H; Kruft V; Bischof O; Muller E C; Wittmann-Liebold B  
CS Max-Delbrück-Centrum für Molekulare Medizin, Berlin, Germany.  
SO EMBO JOURNAL, (1995 Sep 15) 14 (18) 4578-88.  
Journal code: 8208664. ISSN: 0261-4189.

CY ENGLAND: United Kingdom  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 199511  
ED Entered STN: 19951227  
Last Updated on STN: 19951227  
Entered Medline: 19951113

AB We have investigated protein-rRNA cross-links formed in 30S and 50S ribosomal subunits of Escherichia coli and Bacillus stearothermophilus at the molecular level using UV and 2-iminothiolane as cross-linking agents. We identified amino acids cross-linked to rRNA for 13 ribosomal proteins from these organisms, namely derived from S3, S4, S7, S14, S17, L2, L4, L6, L14, L27, L28, L29 and L36. Several other peptide stretches cross-linked to rRNA have been sequenced in which no direct cross-linked amino acid could be detected. The cross-linked amino acids are positioned within loop domains carrying RNA binding features such as conserved basic and aromatic residues. One of the cross-linked peptides in ribosomal

protein S3 shows a common primary sequence motif--the KH motif--directly involved in interaction with rRNA, and the cross-linked amino acid in ribosomal protein L36 lies within the **zinc finger-like** motif of this protein. The cross-linked amino acids in ribosomal proteins S17 and L6 prove the proposed RNA interacting site derived from three-dimensional models. A comparison of our structural data with mutations in ribosomal proteins that lead to antibiotic resistance, and with those from protein-antibiotic cross-linking experiments, reveals functional implications for ribosomal proteins that interact with rRNA.

L2 ANSWER 30 OF 40 MEDLINE on STN DUPLICATE 16  
AN 96282697 MEDLINE  
DN 96282697 PubMed ID: 8722009  
TI Structure and evolution of mammalian ribosomal proteins.  
AU Wool I G; Chan Y L; Gluck A  
CS Department of Biochemistry and Molecular Biology, University of Chicago, IL 60637, USA.  
SO BIOCHEMISTRY AND CELL BIOLOGY, (1995 Nov-Dec) 73 (11-12) 933-47. Ref: 55  
Journal code: 8606068. ISSN: 0829-8211.  
CY Canada  
DT Journal; Article; (JOURNAL ARTICLE)  
General Review; (REVIEW)  
(REVIEW, TUTORIAL)  
LA English  
FS Priority Journals; Space Life Sciences  
OS GENBANK-D11388; GENBANK-D25224; GENBANK-J02824; GENBANK-J03538;  
GENBANK-K03250; GENBANK-M17419; GENBANK-M17422; GENBANK-X06423;  
GENBANK-X13549; GENBANK-X14210; GENBANK-X15013; GENBANK-X15040;  
GENBANK-X15096; GENBANK-X15097; GENBANK-X15098; GENBANK-X51536;  
GENBANK-X53377; GENBANK-X53378; GENBANK-X53504; GENBANK-X57432;  
GENBANK-X58465; GENBANK-X62145; GENBANK-X62146; GENBANK-X62166;  
GENBANK-X66370; GENBANK-X68282; GENBANK-X75161; GENBANK-X78327;  
GENBANK-X82180; +  
EM 199611  
ED Entered STN: 19961219  
Last Updated on STN: 19961219  
Entered Medline: 19961107  
AB Mammalian (rat) **ribosomes** have 80 proteins; the sequence of amino acids in 75 have been determined. What has been learned of the structure of the rat ribosomal proteins is reviewed with particular attention to their evolution and to amino acid sequence motifs. The latter include: clusters of basic or acidic residues; sequence repeats or shared sequences; **zinc finger** domains; bZIP elements; and nuclear localization signals. The occurrence and the possible significance of phosphorylated residues and of ubiquitin extensions is noted. The characteristics of the mRNAs that encode the proteins are summarized. The relationship of the rat ribosomal proteins to the proteins in **ribosomes** from humans, yeast, archaeabacteria, and *Escherichia coli* is collated.  
L2 ANSWER 31 OF 40 MEDLINE on STN  
AN 96028579 MEDLINE  
DN 96028579 PubMed ID: 7574494  
TI Protein-RNA recognition.  
AU Draper D E  
CS Department of Chemistry, Johns Hopkins University, Baltimore, Maryland 21218, USA.  
NC GM29048 (NIGMS)  
SO ANNUAL REVIEW OF BIOCHEMISTRY, (1995) 64 593-620. Ref: 183  
Journal code: 2985150R. ISSN: 0066-4154.  
CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
General Review; (REVIEW)  
(REVIEW, ACADEMIC)

LA English  
FS Priority Journals  
EM 199511  
ED Entered STN: 19951227  
Last Updated on STN: 19980206  
Entered Medline: 19951103  
AB Specific interactions between RNAs and proteins are fundamental to many cellular processes, including the assembly and function of ribonucleoprotein particles (RNPs), such as **ribosomes** and spliceosomes and the post-transcriptional regulation of gene expression. Among the complexes studied to date are small RNAs bound to individual amino acids, tRNAs and tRNA fragments bound to their cognate aminoacyl-tRNA synthetases, and a variety of proteins bound to RNA single strands, hairpins, irregular helices, and tertiary structures stabilized by bound cations. Several proteins use a beta-sheet surface to bind RNAs, and others insert an alpha-helix into the widened major groove of a non-canonical RNA helix. Distortion or rearrangement of the RNA structure by bound protein is a common theme. The structural details of protein-RNA complexes are being resolved by nuclear magnetic resonance (NMR) and X-ray crystallography, but thorough thermodynamic analyses of recognition mechanisms have yet to be performed.

L2 ANSWER 32 OF 40 MEDLINE on STN DUPLICATE 17  
AN 93181260 MEDLINE  
DN 93181260 PubMed ID: 8441676  
TI Zinc finger-like motifs in rat ribosomal proteins S27 and S29.  
AU Chan Y L; Suzuki K; Olvera J; Wool I G  
CS Department of Biochemistry and Molecular Biology, University of Chicago, IL 60637.  
NC GM-21769 (NIGMS)  
SO NUCLEIC ACIDS RESEARCH, (1993 Feb 11) 21 (3) 649-55.  
Journal code: 0411011. ISSN: 0305-1048.  
CY ENGLAND: United Kingdom  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
OS GENBANK-X59051; GENBANK-X59375  
EM 199303  
ED Entered STN: 19930416  
Last Updated on STN: 19970203  
Entered Medline: 19930326  
AB The primary structures of the rat 40S ribosomal subunit proteins S27 and S29 were deduced from the sequences of nucleotides in recombinant cDNAs and confirmed by determination of amino acid sequences in the proteins. Ribosomal protein S27 has 83 amino acids and the molecular weight is 9,339. Hybridization of cDNA to digests of nuclear DNA suggests that there are 4-6 copies of the S27 gene; the mRNA for the protein is about 620 nucleotides in length. Ribosomal protein S29 has 55 amino acids and the molecular weight is 6,541. There are 14-17 copies of the S29 gene and its mRNA is about 500 nucleotides in length. Rat ribosomal protein S29 is related to several members of the archaeabacterial and eubacterial S14 family of ribosomal proteins. S27 and S29 have zinc finger-like motifs as do other proteins from eukaryotic, archaeabacterial, eubacterial, and mitochondrial **ribosomes**. Moreover, **ribosomes** and ribosomal subunits appear to contain zinc and iron as well.

L2 ANSWER 33 OF 40 MEDLINE on STN DUPLICATE 18  
AN 93277953 MEDLINE  
DN 93277953 PubMed ID: 8504167  
TI HL35e and HLA: primary structure of two very basic and cysteine-rich ribosomal proteins from *Haloarcula marismortui*.  
AU Bergmann U; Wittmann-Liebold B

CS Max-Planck-Institut fur Molekulare Genetik, Abteilung Wittmann, Berlin,  
Germany.  
SO BIOCHIMICA ET BIOPHYSICA ACTA, (1993 May 28) 1173 (2) 195-200.  
Journal code: 0217513. ISSN: 0006-3002.  
CY Netherlands  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 199307  
ED Entered STN: 19930716  
Last Updated on STN: 20030403  
Entered Medline: 19930702  
AB Two small and very basic ribosomal proteins have been purified from the 50S ribosomal subunit of the archaeabacterium *Haloarcula marismortui* by RP-HPLC. The complete primary structures of these two proteins, which we refer to as HL35e and HLA, have been determined by protein chemical methods. Both proteins are characterized by a high content of basic amino acids and the presence of two pairs of cysteines in each polypeptide chain, one of which resembles the C4-zinc-finger motif. Comparison of the protein sequences with those of other ribosomal proteins revealed that HL35e shows significant sequence homology exclusively to eukaryotic ribosomal proteins, namely to yeast L35 and to L37 from rat. For HLA no homologous ribosomal protein so far known could be found. Obviously, HL35e and HLA have no counterparts in eubacterial ribosomes.

L2 ANSWER 34 OF 40 MEDLINE on STN DUPLICATE 19  
AN 92235006 MEDLINE  
DN 92235006 PubMed ID: 1569059  
TI Molecular cloning, sequencing, deletion, and overexpression of a methionine aminopeptidase gene from *Saccharomyces cerevisiae*.  
AU Chang Y H; Teichert U; Smith J A  
CS Department of Molecular Biology, Massachusetts General Hospital, Boston.  
SO JOURNAL OF BIOLOGICAL CHEMISTRY, (1992 Apr 25) 267 (12) 8007-11.  
Journal code: 2985121R. ISSN: 0021-9258.  
CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
OS GENBANK-L01675; GENBANK-L01676; GENBANK-L01677; GENBANK-M77092;  
GENBANK-M80647; GENBANK-M83679; GENBANK-M83680; GENBANK-M83681;  
GENBANK-M83724; GENBANK-X53709  
EM 199205  
ED Entered STN: 19920612  
Last Updated on STN: 20000303  
Entered Medline: 19920528  
AB A yeast gene for a methionine aminopeptidase, one of the central enzymes in protein synthesis, was cloned and sequenced. The DNA sequence encodes a precursor protein containing 387 amino acid residues. The mature protein, whose NH<sub>2</sub>-terminal sequence was confirmed by Edman degradation, consists of 377 amino acids. The function of the 10-residue sequence at the NH<sub>2</sub> terminus, containing 1 serine and 6 threonine residues, remains to be established. In contrast to the structure of the prokaryotic enzyme, the yeast methionine aminopeptidase consists of two functional domains: a unique NH<sub>2</sub>-terminal domain containing two motifs resembling zinc fingers, which may allow the protein to interact with ribosomes, and a catalytic COOH-terminal domain resembling other prokaryotic methionine aminopeptidases. Furthermore, unlike the case for the prokaryotic gene, the deletion of the yeast MAP1 gene is not lethal, suggesting for the first time that alternative NH<sub>2</sub>-terminal processing pathway(s) exist for cleaving methionine from nascent polypeptide chains in eukaryotic cells.

L2 ANSWER 35 OF 40 MEDLINE on STN DUPLICATE 20

AN 92237295 MEDLINE  
DN 92237295 PubMed ID: 1570325  
TI Genes encoding transcription factor IIIA and the RNA polymerase common subunit RPB6 are divergently transcribed in *Saccharomyces cerevisiae*.  
AU Woychik N A; Young R A  
CS Department of Gene Regulation, Roche Institute of Molecular Biology, Nutley, NJ 07110.  
NC GM-11605 (NIGMS)  
GM-34365 (NIGMS)  
SO PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, (1992 May 1) 89 (9) 3999-4003.  
Journal code: 7505876. ISSN: 0027-8424.  
CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
OS GENBANK-M90638  
EM 199205  
ED Entered STN: 19920612  
Last Updated on STN: 19980206  
Entered Medline: 19920528  
AB The gene encoding *Saccharomyces cerevisiae* transcription factor TFIIIA has been found adjacent to RPB6, a gene that specifies a subunit shared by nuclear RNA polymerases. Analysis of DNA upstream of the RPB6 gene revealed an open reading frame that predicts a protein, designated PZF1, with nine C2H2 zinc fingers. The presence of nine C2H2 zinc fingers in PZF1 protein, a hallmark of amphibian TFIIIA proteins, suggested that PZF1 might be a TFIIIA homologue. We found that purified recombinant PZF1 specifically binds the internal control region (ICR) of the 5S rRNA gene in *S. cerevisiae*. The presence of nine C2H2 zinc fingers, the specific binding to ICR DNA, and the similarity of the predicted molecular mass of PZF1 with that determined for purified yeast TFIIIA, together indicate that PZF1 is TFIIIA. The yeast and amphibian TFIIIA proteins share only a limited number of residues outside of those normally conserved in C2H2 zinc fingers; these conserved residues may provide clues to the sequence specificity of these proteins. The PZF1 gene was found to be single copy, transcribed into a 1.5-kilobase mRNA, and essential for yeast cell viability. Interestingly, the yeast RPB6 and TFIIIA coding sequences are divergently transcribed and are separated by only 233 base pairs, providing the potential for coregulated expression of components of RNA polymerases and the 5S rRNA component of ribosomes.

L2 ANSWER 36 OF 40 MEDLINE on STN DUPLICATE 21  
AN 94040711 MEDLINE  
DN 94040711 PubMed ID: 1340463  
TI SSL1, a suppressor of a HIS4 5'-UTR stem-loop mutation, is essential for translation initiation and affects UV resistance in yeast.  
AU Yoon H; Miller S P; Pabich E K; Donahue T F  
CS Department of Biology, Indiana University, Bloomington 47405.  
NC GM32263 (NIGMS)  
SO GENES AND DEVELOPMENT, (1992 Dec) 6 (12B) 2463-77.  
Journal code: 8711660. ISSN: 0890-9369.  
CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
OS GENBANK-Z17385  
EM 199312  
ED Entered STN: 19940117  
Last Updated on STN: 20030211  
Entered Medline: 19931201  
AB The SSL1 locus was identified as a trans-acting suppressor that restores HIS4 expression despite a stem-loop structure in the 5'-UTR. SSL1 encodes

an essential protein of 52 kD with features characteristic of a protein with multiple **zinc fingers**. The mechanism of SSL1 suppression is not related to altering his4 transcription or removing the stem-loop sequence from the 5'-UTR; rather, 3- to 5-fold increases in His4 translational expression are observed indicating a post-transcriptional mechanism for SSL1 suppression. SSL1 suppressor mutants that are conditional for growth have altered **polysome** profiles at the restrictive temperature, and their cell-free extracts are thermolabile in their ability to translate exogenously added mRNA. In addition, the mechanism of suppression appears to be specific for stem-loop structures placed near the 5' end of the message as opposed to a stem-loop located at a downstream position in the 5'-UTR. These observations suggest a role for this protein in promoting translation initiation presumably at the level of ribosomal binding to mRNA. Surprisingly, SSL1 suppressor mutations that are shown to confer an *in vivo* and *in vitro* defect in translation initiation also rendered yeast hypersensitive to UV irradiation. This latter phenotype was observed previously with a mutation in the SSL2 suppressor gene, which encodes the yeast homolog of the human gene ERCC-3, for which a defective form causes xeroderma pigmentosum. In light of the related effects of mutations in the SSL1 and SSL2 genes, the encoded proteins may functionally interact both to promote DNA repair and perform an essential function during translation initiation.

L2 ANSWER 37 OF 40 MEDLINE on STN  
AN 92379087 MEDLINE  
DN 92379087 PubMed ID: 1511009  
TI Enriched sources of Escherichia coli replication proteins. The dnaG primase is a zinc metalloprotein.  
AU Stamford N P; Lilley P E; Dixon N E  
CS Centre for Molecular Structure and Function, Research School of Chemistry, Australian National University, Canberra, ACT.  
SO BIOCHIMICA ET BIOPHYSICA ACTA, (1992 Aug 17) 1132 (1) 17-25.  
Journal code: 0217513. ISSN: 0006-3002.  
CY Netherlands  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 199209  
ED Entered STN: 19921018  
Last Updated on STN: 19980206  
Entered Medline: 19920930  
AB Primase, the product of the Escherichia coli dnaG gene, is the enzyme responsible for RNA primer synthesis on both template strands at replication forks during chromosomal DNA synthesis. The dnaG gene was modified by replacement of the natural **ribosome**-binding site with one complementary to the 3' end of 16S rRNA, and then inserted downstream of tandem bacteriophage lambda PR and PL promoters in the pUC9-derived vector pCE30. Following thermal induction of transcription, the resulting plasmid pPL195 directed synthesis of primase activity to levels corresponding to approx. 120,000 molecules per cell. The overproduced protein was soluble and was readily purified in high yield (31 mg per l of culture). Purified primase was monomeric, was fully active in priming replication at the bacteriophage G4 complementary strand origin, and was shown to contain 0.92 +/- 0.08 g atom of tightly-bound zinc per mol of protein. Potential zinc-binding amino-acid residues near the N-terminus of the protein were identified. Although a mutant primase lacking 27 amino acid residues from the N-terminus was partly soluble, it was completely inactive.

L2 ANSWER 38 OF 40 MEDLINE on STN  
AN 91232945 MEDLINE  
DN 91232945 PubMed ID: 1827670  
TI Two **zinc finger** proteins from Xenopus laevis bind the

AU same region of 5S RNA but with different nuclease protection patterns.  
AU Sands M S; Bogenhagen D F  
CS Department of Pharmacological Sciences, State University of New York,  
Stony Brook 11794.  
NC GM33321 (NIGMS)  
SO NUCLEIC ACIDS RESEARCH, (1991 Apr 25) 19 (8) 1797-803.  
Journal code: 0411011. ISSN: 0305-1048.  
CY ENGLAND: United Kingdom  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 199106  
ED Entered STN: 19910707  
Last Updated on STN: 19910707  
Entered Medline: 19910619  
AB Immature oocytes from *Xenopus laevis* contain a 42S ribonucleoprotein particle (RNP) containing 5S RNA, tRNA, a 43 kDa protein, and a 48 kDa protein. A particle containing 5S RNA and the 43 kDa protein (p43-5S) liberated from the 42S particle upon brief treatment with urea can be purified by anion exchange chromatography. The purified p43-5S RNA migrates as a distinct species during electrophoresis on native polyacrylamide gels. Radiolabeled 5S RNA can be incorporated into the p43-5S complex by an RNA exchange reaction. The resulting complexes containing labeled 5S RNA have a mobility on polyacrylamide gels identical to that of purified p43-5S RNPs. RNP complexes containing 5S RNA labeled at either the 5' or 3' end were probed with a variety of nucleases in order to identify residues protected by p43. Nuclease protection assays performed with alpha-sarcin indicate that p43 binds primarily helices I, II, IV, and V of 5S RNA. This is the same general binding site observed for TFIIIA on 5S RNA. Direct comparison of the binding sites of p43 and TFIIIA with T1 and cobra venom nucleases reveals striking differences in the protection patterns of these two proteins.  
L2 ANSWER 39 OF 40 MEDLINE on STN  
AN 89174562 MEDLINE  
DN 89174562 PubMed ID: 2538414  
TI An extended ubiquitin of *Dictyostelium* is located in the small ribosomal subunit.  
AU Muller-Taubenberger A; Graack H R; Grohmann L; Schleicher M; Gerisch G  
CS Max-Planck-Institut fur Biochemie, Martinsried, Federal Republic of Germany.  
SO JOURNAL OF BIOLOGICAL CHEMISTRY, (1989 Apr 5) 264 (10) 5319-22.  
Journal code: 2985121R. ISSN: 0021-9258.  
CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 198905  
ED Entered STN: 19900306  
Last Updated on STN: 19900306  
Entered Medline: 19890511  
AB According to its cDNA sequence, the product of the DUB1 gene of *Dictyostelium discoideum*, called ubex52, consists of a ubiquitin monomer with a basic COOH-terminal tail of 52 amino acids that includes a putative zinc finger motif. Antipeptide antibodies raised against the COOH-terminal end of the tail indicated that the ubex52 protein is present in all developmental stages of *D. discoideum* and that similar proteins with apparent molecular masses of 15 to 17 kDa are found in yeast, wheat germ, *Drosophila*, and mammals. Subcellular fractionation showed that the *D. discoideum* and *Saccharomyces cerevisiae* proteins recognized by the antibodies are associated with the ribosomal fraction. After separation and purification of the 40 and 60 S ribosomal subunits of *D. discoideum*, the ubex52 protein was exclusively recovered in the small subunit.

L2 ANSWER 40 OF 40 MEDLINE on STN  
AN 89181932 MEDLINE  
DN 89181932 PubMed ID: 2538756  
TI Identification of the long ubiquitin extension as ribosomal protein S27a.  
AU Redman K L; Rechsteiner M  
CS Department of Biochemistry, University of Utah School of Medicine, Salt Lake City 84132.  
SO NATURE, (1989 Mar 30) 338 (6214) 438-40.  
Journal code: 0410462. ISSN: 0028-0836.  
CY ENGLAND: United Kingdom  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 198904  
ED Entered STN: 19900306  
Last Updated on STN: 19900306  
Entered Medline: 19890428  
AB Two proteins of unknown function are encoded by 3' in-frame extensions of ubiquitin genes. The polypeptides are synthesized as an additional 52 or 76-80 amino acids on the C terminus of ubiquitin, an unusual arrangement conserved in man, yeast and plants (J. Callis and R. Vierstra, personal communication). Although not homologous to each other or to ubiquitin, both extension proteins are highly basic and contain patterns of cysteine and histidine similar to those proposed to form 'zinc fingers'. The longer C-terminal extension protein (CEP80) is 30% lysine and arginine and, when denatured, behaves like a small cationic protein. Its properties after isolation in physiological conditions, however, suggested that CEP80 is part of an RNA-protein complex. Using the antibodies that confirmed the presence of CEP80 in eukaryotic cells, we show here that the protein is located on **ribosomes**. Immunoblotting of rat 40S subunit proteins specifically identifies CEP80 as ribosomal protein S27a.

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FULL ESTIMATED COST	17.61	17.82

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Search Page 10

## WEST Search History

DATE: Saturday, July 26, 2003

Set Name    Query  
side by side

*DB=USPT,PGPB,JPAB,EPAB,DWPI; PLUR=YES; OP=ADJ*

L1      zinc finger same (ribosome or polysome)

Hit Count    Set Name  
result set

50      L1

END OF SEARCH HISTORY

**WEST****Generate Collection****Print****Search Results - Record(s) 1 through 50 of 50 returned.** **1. Document ID: US 20030134350 A1**

L1: Entry 1 of 50

File: PGPB

Jul 17, 2003

PGPUB-DOCUMENT-NUMBER: 20030134350

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030134350 A1

TITLE: Zinc finger domain recognition code and uses thereof

PUBLICATION-DATE: July 17, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Sera, Takashi	San Diego	CA	US	

US-CL-CURRENT: 435/69.1; 435/226, 435/320.1, 435/325, 435/91.2, 536/23.2

## ABSTRACT:

The present invention relates to DNA binding proteins comprising zinc finger domains in which two histidine and two cysteine residues coordinate a central zinc ion. More particularly, the invention relates to the identification of a context-independent recognition code to design zinc finger domains. This code permits identification of an amino acid for positions -1, 2, 3 and 6 of the .alpha.-helical region of the zinc finger domain from four-base pair nucleotide target sequences. The invention includes zinc finger proteins (ZFPs) designed using this recognition code, nucleic acids encoding these ZFPs and methods of using such ZFPs to modulate gene expression, alter genome structure, inhibit viral replication and detect alterations (e.g., nucleotide substitutions, deletions or insertions) in the binding sites for such proteins. In addition, the invention provides a rapid method of assembling a ZFP with three or more zinc finger domains using three sets of 256 oligonucleotides, where each set is designed to target the 256 different 4-base pair targets and allow production of all possible 3-finger ZFPs (i.e., >>10.sup.6) from a total of 768 oligonucleotides.

L1: Entry 1 of 50

File: PGPB

Jul 17, 2003

DOCUMENT-IDENTIFIER: US 20030134350 A1

TITLE: Zinc finger domain recognition code and uses thereof

Detail Description Paragraph (77):

[0163] The term "expression cassette" as used herein means a DNA sequence capable of directing expression of a particular nucleotide sequence in an appropriate host cell, comprising a promoter operably linked to the nucleotide sequence of interest which is operably linked to termination signals. It also typically comprises sequences required for proper translation of the nucleotide sequence. The coding region usually codes for a protein of interest but may also code for a functional RNA of interest, for example antisense RNA or a nontranslated RNA, in the sense or antisense direction. The expression cassette comprising the nucleotide sequence of interest may be chimeric, meaning that at least one of its components is heterologous with respect to at least one of its other components. The zinc

finger-effector fusions of the present invention are chimeric. The expression cassette may also be one which is naturally occurring but has been obtained in a recombinant form useful for heterologous expression. Typically, however, the expression cassette is heterologous with respect to the host, i.e., the particular DNA sequence of the expression cassette does not occur naturally in the host cell and must have been introduced into the host cell or an ancestor of the host cell by a transformation event. The expression of the nucleotide sequence in the expression cassette may be under the control of a constitutive promoter or of an inducible promoter which initiates transcription only when the host cell is exposed to some particular external stimulus. In the case of a multicellular organism, such as a plant, the promoter can also be specific to a particular tissue or organ or stage of development. In the case of a plastid expression cassette, for expression of the nucleotide sequence from a plastid genome, additional elements, i.e. ribosome binding sites, maybe required.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#) | [KDDC](#) | [Draw Desc](#) | [Image](#)

2. Document ID: US 20030134318 A1

L1: Entry 2 of 50

File: PGPB

Jul 17, 2003

PGPUB-DOCUMENT-NUMBER: 20030134318

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030134318 A1

TITLE: Methods of using randomized libraries of zinc finger proteins for the identification of gene function

PUBLICATION-DATE: July 17, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Casey, Casey C.	San Mateo	CA	US	
Liu, Qiang	Foster City	CA	US	
Rebar, Edward J.	El Cerrito	CA	US	
Wolffe, Alan P.	Orinda	CA	US	

US-CL-CURRENT: 435/6; 435/7.1

ABSTRACT:

The present invention relates to methods of using libraries of randomized zinc finger proteins to identify genes associated with selected phenotypes.

L1: Entry 2 of 50

File: PGPB

Jul 17, 2003

DOCUMENT-IDENTIFIER: US 20030134318 A1

TITLE: Methods of using randomized libraries of zinc finger proteins for the identification of gene function

Detail Description Paragraph (80):

[0112] A typical expression cassette thus contains a promoter operably linked, e.g., to the nucleic acid sequence encoding the zinc finger protein, and signals required, e.g., for efficient polyadenylation of the transcript, transcriptional termination, ribosome binding sites, or translation termination. Additional elements of the cassette may include, e.g., enhancers, and heterologous spliced intronic signals.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KinC	Draim Desc	Image
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3. Document ID: US 20030134302 A1

L1: Entry 3 of 50

File: PGPB

Jul 17, 2003

PGPUB-DOCUMENT-NUMBER: 20030134302

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030134302 A1

TITLE: Libraries of expressible gene sequences

PUBLICATION-DATE: July 17, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Fernandez, Joseph Manuel	Carlsbad	CA	US	
Heyman, John Alastair	Cardiff-by-the-Sea	CA	US	
Hoeffler, James Paul	Carlsbad	CA	US	

US-CL-CURRENT: 435/6; 435/320.1, 435/325, 435/69.1, 536/23.2

## ABSTRACT:

The invention described herein comprises libraries of expressible gene sequences. Such gene sequences are contained on plasmid vectors designed to endow the expressed proteins with a number of useful features such as affinity purification tags, epitope tags, and the like. The expression vectors containing such gene sequences can be used to transfect cells for the production of recombinant proteins. A further aspect of the invention comprises methods of identifying binding partners for the products of such expressible gene sequences.

L1: Entry 3 of 50

File: PGPB

Jul 17, 2003

DOCUMENT-IDENTIFIER: US 20030134302 A1

TITLE: Libraries of expressible gene sequences

Detail Description Table CWU (53):

kinase mRNA 55 46.49 215-2 H-U34822 human JNK1 alpha2 protein 55 47.04 kinase (JNK1A2) mRNA 169-37 H-U35002 human JNK2 betal protein kinase 50 42.09 (JNK2B1) mRNA 169-25 H-U35003 human JNK2 beta2 protein kinase 55 46.71 (JNK2B2) mRNA 167-16 H-U35004 human JNK1 betal protein kinase 52 42.31 (JNK1B1) mRNA M300 B2 H-U35048 TSC-22 protein 15.95 27 M423 E5 H-U35398 Human G protein-coupled 40.26 48.0 kDa receptor mRNA, complete cds A3 H-U35735 Human RACH1 (RACH1) 42.9 78 mRNA, complete cds M250 E5 H-U36764 Eukaryotic translation initiation 35.86 36.0 kDa factor 3 (eIF-3) p36 subunit, transforming growth factor-beta receptor II interacting protein 1 M270 E4 H-U37283 microfibril-associated 19.14 32 glycoprotein-2 (GB: U37283) M426 F3 H-U37352 Protein phosphatase 2A, 56.65 55.0 kDa regulatory subunit B'alpha-1 E1 H-U37529 Human substance P beta-PPT-A 14.3 22 mRNA, complete cds M305 H5 H-U37547 apoptosis inhibitor 68.09 64 M424 D5 H-U38480 Human retinoid X receptor- 51.04 61.0 kDa gamma mRNA, complete cds M270 F4 H-U38810 Human mab-21 cell fate- determining protein homolog (CAGR1) mRNA, M467 F6 H-U38904 Human zinc finger protein C2H2- 40.48 47.0 kDa 25 mRNA, complete cds E2 H-U39318 Human E2 ubiquitin conjugating 16.28 22 enzyme UbcH5C (UBCH5C) mRNA, complete cds 166-75 H-U39657 human MAP kinase kinase 6 40 36.81 (MKK6) mRNA M298 E4 H-U39945 human adenylate kinase 2 (adk2) 26.3633 38.0 kDa mRNA 166-38 H-U40282 human integrin-linked kinase 55 49.68 (ILK) mRNA 169-65 H-U40343 human CDK inhibitor p19INK4d 18 18.33 mRNA E2 H-U40705 Homo sapiens telomeric repeat 48.4 52 binding factor (TRF1) mRNA, complete cds 166-50 H-U40989 human tat interactive protein 60 53.09 mRNA M266 H6 H-U41767 metargidin precursor

89.65 90 M270 F3 H-U41804 Human putative T1/ST2 receptor 25.08 35.0 kDa binding protein precursor mRNA, complete cds D5 H-U42360 Human N33 gene 38.28 38 A1 H-U43368 Vascular endothelial growth 22.88 33 factor B M421 G7 H-U43901 Human 37 kD laminin receptor 32.56 58.0 kDa precursor/p40 ribosome associated protein gene, complete cds M392 C2 H-U43923 transcription factor SUPTH4 12.98 16.0 kDa E2 H-U46024 Myotubular myopathy 1 66.44 58 M330 A1 H-U46838 p105MCM 90.42 97 M476 E2 H-U47677 Human transcription factor E2F1 48.18 53.0 kDa (E2F1) gene, promoter and M421 H1 H-U48707 Human protein phosphatase-1 18.92 36.0 kDa inhibitor mRNA, complete cds M302 B7 H-U49070 peptidyl-prolyl isomerase PIN1 18.04 28.0 kDa C1 H-U49188 Human placenta (Diff33) mRNA, 54.45 70 complete cds M485 H2 H-U49837 Human LIM protein MLP mRNA, 21.45 34.0 kDa complete cds D2 H-U49897 Homo sapiens phenylalanine 49.83 64 hydroxylase (PAH) mRNA, complete cds B2 H-U49957 Human LIM protein (LPP) 67.43 67 mRNA, partial cds 166-16 H-U50196 human adenosine kinase mRNA 50 38.02 A4 H-U50939 Human amyloid precursor 58.85 60 protein-binding protein 1 mRNA, complete cds G3 H-U51224 Human U2AFBPL gene, complete 52.8 55 cds M486 E3 H-U51333 Hexokinase 3 (white cell) 101.64 100.0 kDa M305 D1 H-U51478 ATPase, Na+/K+ transporting, 30.8 36 beta 3 subunit M416 H3 H-U52112 Homo sapiens Xq28 genomic 25.96 36.0 kDa DNA in the region of the L1CAM locus containing the genes for neural cell adhesion molecule L1 (L1CAM), arginine-vasopressin receptor (AVPR2), C1 p115 (C1), ARD1 N-acetyltransferase related protein (TE2), renin-binding protein (RbP), host cell factor 1 (HCF1), and interleukin-1 receptor-associated kinase (IRAK) genes, complete cds, and Xq28lu2 gene M463 E1 H-U53442 human p38Beta MAP kinase 40.99 49.0 kDa mRNA G3 H-U53446 Human mitogen-responsive 84.81 98 phosphoprotein DOC-2 mRNA, complete cds M463 C1 H-U54617 human pyruvate dehydrogenase 45.28 52.0 kDa kinase isoform 4 mRNA 169-38 H-U54645 methylmalonyl-coA mutase 38 25.59 precursor M300 H3 H-U56255 t-complex sterility protein 12.54 16 homolog CW-1 C4 H-U56417 Human lysophosphatidic acid 31.24 46 acyltransferase-alpha mRNA, complete cds M305 A2 H-U56637 actin-capping protein alpha 31.57 31 subunit isoform 1 M235 E6 H-U56814 Human DNase1-Like III protein 33.66 40.0 kDa (DNAS1L3) mRNA, complete cds, involved in apoptosis Binds specifically to G-ACTIN AND BLOCKS ACTIN POLYMERIZATION. D5 H-U57059 31.02 36 B3 H-U57093 Human small GTP-binding 24.09 34 protein rab27b mRNA, complete cds D3 H-U57099 Human APEG-1 mRNA, 12.54 20 complete cds F1 H-U58331 Sarcoglycan, delta (35 kD 28.27 24 dystrophin-associated glycoprotein) M512 F4 H-U58334 Human Bcl2, p53 binding protein 110.66 108.0 kDa Bbp/53BP2 (BBP/53BP2) mRNA, complete cds B3 H-U58516 Human breast epithelial antigen 42.68 50 BA46 mRNA, complete cds M250 E4 H-U58522 Human huntingtin interacting 22.11 30 protein (HIP2) mRNA, complete cds M419 G2 H-U60207 human stress responsive 53.640 63.0 kDa serine/threonine protein kinase Krs-2 mRNA M298 B2 H-U60276 arsA homolog (hASNA-I) 36.63 47.0 kDa B2 H-U60521 Human protease proMch6 (Mch6) 45.87 52 mRNA, complete cds F3 H-U61166 Human SH3 domain-containing 57.31 57 protein SH3P17 mRNA, complete cds M250 B5 H-U61232 cofactor E (tubulin-folding protein), REQUIRED FOR VIABILITY IN THE ABSENCE OF THE KINESIN-RELATED CIN8 A5 H-U62392 Homo sapiens zinc finger protein 43.45 52 mRNA, complete cds G1 H-U62801 Human protease M mRNA, 26.95 33 complete cds M266 B1 H-U62962 Int-6 , Human Int-6 mRNA, 49.06 52.0 kDa complete cds M300 G1 H-U63295 seven in absentia homolog 31.13 36 M306 H3 H-U64198 94.93 98 H3 H-U64863 Human hPD-1 (hPD-1) mRNA, 31.79 37 complete cds B3 H-U65581 Human ribosomal protein L3-like 44.88 52 mRNA, complete cds M341 D1 H-U65918 DAZ homologue [DAZLA] 32.56 36.0 kDa M302 E1 H-U65928 Jun activation domain binding 36.85 48.0 kDa protein M512 D3 H-U66347 Homo sapiens cAMP 46.97 60.0 kDa phosphodiesterase (PDE4C) mRNA, 4C-426 isoform, complete cds M306 F3 H-U66867 ubiquitin-conjugating enzyme E2I 17.49 28 [UBE2I] M416 E2 H-U68111 Human protein phosphatase 22.66 37.0 kDa inhibitor 2 (PPP1R2) gene F2 H-U68382 Mannosidase, alpha B, lysosomal 35.64 36 G2 H-U69141 Glutaryl-Coenzyme A 48.29 56 dehydrogenase B2 H-U70660 Human copper transport protein 7.59 16 HAH1 (HAH1) mRNA, complete cds M297 B2 H-U71374 peroxisomal membrane protein 40.15 40.0 kDa (Pex13p) M306 A3 H-U75272 progastricsin [PGC] 42.79 49.0 kDa A2 H-U75285 Homo sapiens apoptosis inhibitor 15.73 25 survivin gene, complete cds B2 H-U77456 Human nucleosome assembly 41.36 50 protein 2 mRNA, complete cds C2 H-U78294 Homo sapiens 15S-lipoxygenase 74.47 74 mRNA, complete cds

4. Document ID: US 20030119023 A1

L1: Entry 4 of 50

File: PGPB

Jun 26, 2003

PGPUB-DOCUMENT-NUMBER: 20030119023

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030119023 A1

TITLE: Nucleic acid binding polypeptides characterized by flexible linkers connected nucleic acid binding modules

PUBLICATION-DATE: June 26, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Choo, Yen	Cambridge		GB	
Klug, Aaron	Cambridge		GB	
Moore, Michael	Bucks		GB	

US-CL-CURRENT: 435/6; 435/199, 435/320.1, 435/325, 435/455, 435/69.1, 536/23.2

## ABSTRACT:

We describe a method of producing a modified nucleic acid binding polypeptide, the method comprising the steps of: (a) providing a nucleic acid binding polypeptide comprising a plurality of nucleic acid binding modules; (b) selecting a first binding domain consisting of one or two contiguous nucleic acid binding modules; (c) selecting a second binding domain consisting of one or two contiguous nucleic acid binding modules; and (d) introducing a flexible linker sequence to link the first and second binding domains, the flexible linker sequence comprising five or more amino acid residues. Use of structured linkers, alone or in combination with flexible linkers, is also disclosed.

L1: Entry 4 of 50

File: PGPB

Jun 26, 2003

DOCUMENT-IDENTIFIER: US 20030119023 A1

TITLE: Nucleic acid binding polypeptides characterized by flexible linkers connected nucleic acid binding modules

Detail Description Paragraph (129):

[0208] We have determined that DNA-binding subunits comprising two-zinc finger domains may be engineered through the variety of approaches described herein, each of which has distinct advantages for creating DNA-binding proteins. In each of the libraries detailed here, amino acid randomizations are made at various positions in the two zinc finger structures. Preferred randomizations are described here as well as in patent applications WO 96/06166, WO 98/53057, WO 98/53058, WO 98/53059, and WO 98/53060. However, a more restricted number of randomizations may be utilized in library construction to facilitate the process of construction. The library construction methods described herein can be used in conjunction with a variety of selection methods including phage display and ribosome display as detailed in patent applications WO 97/53057 and WO 00/27878., both of which are incorporated herein by reference.

Detail Description Paragraph (150):

[0224] To construct the 3x2F ZGS clone, wild type ZIF sequence is amplified by means of primers A, a, B and b, while GAC-clone sequence is amplified by means of primers C, c, D and d. The respective amplification products are then subjected to overlap PCR, with a template fill-in step. Finally, each of the products is amplified with end primers A+b and C+d. The amplification products are then digested with EagI, and ligated at that site. The full length product comprising sequence encoding the 6 finger protein is-then digested with NotI and NdeI, and ligated into NotI/NdeI

digested pCITE4b vector (Amersham International Plc). pCITE4b is a eukaryotic expression vector containing a T7 transcription promoter and an internal eukaryotic ribosome translation entry site for protein expression. Plasmids containing the zinc-finger constructs are propagated in E. coli XL1-Blue (Stratagene) cells.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)

[KINIC](#) | [Drawn Desc](#) | [Image](#)

5. Document ID: US 20030108880 A1

L1: Entry 5 of 50

File: PGPB

Jun 12, 2003

PGPUB-DOCUMENT-NUMBER: 20030108880

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030108880 A1

TITLE: Modified zinc finger binding proteins

PUBLICATION-DATE: June 12, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Rebar, Edward	El Cerrito	CA	US	
Jamieson, Andrew	San Francisco	CA	US	

US-CL-CURRENT: 435/6; 435/226, 435/320.1, 435/325, 435/69.1, 536/23.2

ABSTRACT:

Disclosed herein are compositions and method comprising non-canonical (e.g., non-C2H2) zinc finger proteins.

L1: Entry 5 of 50

File: PGPB

Jun 12, 2003

DOCUMENT-IDENTIFIER: US 20030108880 A1

TITLE: Modified zinc finger binding proteins

Detail Description Paragraph (26):

[0046] A "gene," for the purposes of the present disclosure, includes a DNA region encoding a gene product (see below), as well as all DNA regions that regulate the production of the gene product, whether or not such regulatory sequences are adjacent to coding and/or transcribed sequences. Accordingly, a gene includes, but is not necessarily limited to, promoter sequences, terminators, translational regulatory sequences such as ribosome binding sites and internal ribosome entry sites, enhancers, silencers, insulators, boundary elements, replication origins, matrix attachment sites and locus control regions. Further, a promoter can be a normal cellular promoter or, for example, a promoter of an infecting microorganism such as, for example, a bacterium or a virus. For example, the long terminal repeat (LTR) of retroviruses is a promoter region that may be a target for a modified zinc finger binding polypeptide. Promoters from members of the Lentivirus group, which include such pathogens as human T-cell lymphotropic virus (HTLV) 1 and 2, or human immunodeficiency virus (HIV) 1 or 2, are examples of viral promoter regions which may be targeted for transcriptional modulation by a modified zinc finger binding polypeptide as described herein.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)

[KINIC](#) | [Drawn Desc](#) | [Image](#)

6. Document ID: US 20030105593 A1

L1: Entry 6 of 50

File: PGPB

Jun 5, 2003

PGPUB-DOCUMENT-NUMBER: 20030105593

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030105593 A1

TITLE: Selection of sites for targeting by zinc finger proteins and methods of designing zinc finger proteins to bind to preselected sites

PUBLICATION-DATE: June 5, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Eisenberg, Stephen P.	Boulder	CO	US	
Case, Casey C.	San Mateo	CA	US	
Cox, George N. III	Louisville	CO	US	
Jamieson, Andrew	San Francisco	CA	US	
Rebar, Edward J.	Berkeley	CA	US	

US-CL-CURRENT: 702/19; 435/226

## ABSTRACT:

The invention provides criteria and methods for selecting optimum subsequence(s) from a target gene for targeting by a zinc finger protein. Some of the methods of target site selection seek to identify one or more target segments having a DNA motif containing one or more so-called D-able subsites having the sequence 5'NNGK3'. Other methods of the invention are directed to selection of target segments within target genes using a correspondence regime between different triplets of three bases and the three possible positions of a triplet within a nine-base site. In another aspect, the invention provides methods of designing zinc finger proteins that bind to a preselected target site. These methods can be used following the preselection of target sites according to the procedures and criteria described above. The methods of design use a database containing information about previously characterized zinc finger proteins.

L1: Entry 6 of 50

File: PGPB

Jun 5, 2003

DOCUMENT-IDENTIFIER: US 20030105593 A1

TITLE: Selection of sites for targeting by zinc finger proteins and methods of designing zinc finger proteins to bind to preselected sites

Detail Description Paragraph (49):

[0076] Zinc finger proteins can be used to modulate the expression of any target polynucleotide sequence. The sequence can be for example, genomic, cDNA or RNA or an expressed sequence tag (EST). Typically, the target polynucleotide includes a gene or a fragment thereof. The term gene is used broadly to include, for example, exonic regions, intronic regions, 5'UTRs, 3'UTRs, 5'flanking sequences, 3'flanking sequences, promoters, enhancers, transcription start sites, ribosome binding sites, regulatory sites, poly-adenylation sites. Target genes can be cellular, viral or from other sources including purely theoretical sequences. Target gene sequences can be obtained from databases, such as GenBank, the published literature or can be obtained de novo. Target genes include genes from pathological viruses and microorganisms for which repression of expression can be used to abort infection. Examples of pathogenic viruses include hepatitis (A, B, or C), herpes virus (e.g., VZV, HSV-1, HSV-6, HSV-II, and CMV, Epstein Barr virus), HIV, ebola, adenovirus, influenza virus, flaviviruses, echovirus, rhinovirus, coxsackie virus, coronaviruses, respiratory syncytial virus, mumps virus, rotavirus, measles virus, rubella virus, parvovirus, vaccinia virus, HTLV virus, dengue virus, papillomavirus, molluscum

virus, poliovirus, rabies virus, JC virus and arboviral encephalitis virus. Some examples of pathogenic bacteria include chlamydia, rickettsial bacteria, mycobacteria, staphylococci, treptococci, pneumonococci, meningococci and conococci, klebsiella, proteus, serratia, pseudomonas, legionella, diphtheria, salmonella, bacilli, cholera, tetanus, botulism, anthrax, plague, leptospirosis, and Lyme disease bacteria.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#) | [KMC](#) | [Drawn Desc](#) | [Image](#)

7. Document ID: US 20030092010 A1

L1: Entry 7 of 50

File: PGPB

May 15, 2003

PGPUB-DOCUMENT-NUMBER: 20030092010

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030092010 A1

TITLE: Molecular switches

PUBLICATION-DATE: May 15, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Choo, Yen	Cambridge		GB	
Ullman, Christopher Graeme	London		GB	

US-CL-CURRENT: 435/6; 435/7.1

ABSTRACT:

Provided herein are compositions comprising molecular switches and methods for identifying, selecting and using such molecular switches. Also provided are methods for the identification and use of ligand-dependent binding molecules and ligands.

L1: Entry 7 of 50

File: PGPB

May 15, 2003

DOCUMENT-IDENTIFIER: US 20030092010 A1

TITLE: Molecular switches

Summary of Invention Paragraph (253):

[0249] In the above example, the nucleic acid or polypeptide binding molecules (e.g., zinc fingers) are present on phage. However, alternative methods for displaying the nucleic acid or polypeptide binding molecules could be used. As described in section A above, an entirely *in vitro* polysome display system has also been reported (Mattheakis et al., (1994) Proc Natl Acad Sci U S A. 91, 9022-6) in which nascent peptides are physically attached via the ribosome to the RNA which encodes them. Using a library of RNA, ribosomes expressing the nucleic acid or polypeptide binding molecules, screening is performed in a similar manner to the phage display method except that typically after an initial preselection step to remove nucleic acid or polypeptide binding molecules that bind in the absence of the ligand only one selection step is performed and the resulting nucleic acid or polypeptide binding molecules identified by cloning the RNA from the RNA ribosome complexes and sequencing the clones obtained.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#) | [KMC](#) | [Drawn Desc](#) | [Image](#)

8. Document ID: US 20030092000 A1

L1: Entry 8 of 50

File: PGPB

May 15, 2003

PGPUB-DOCUMENT-NUMBER: 20030092000

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030092000 A1

TITLE: Selection of sites for targeting by zinc finger proteins and methods of designing zinc finger proteins to bind to preselected sites

PUBLICATION-DATE: May 15, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Eisenberg, Stephen	Boulder	CO	US	
Case, Casey	San Mateo	CA	US	
Cox, George III	Louisville	CO	US	
Jamieson, Andrew	San Francisco	CA	US	
Rebar, Edward	Berkeley	CA	US	

US-CL-CURRENT: 435/6; 702/20

## ABSTRACT:

The invention provides criteria and methods for selecting optimum subsequence(s) from a target gene for targeting by a zinc finger protein. Some of the methods of target site selection seek to identify one or more target segments having a DNA motif containing one or more so-called D-able subsites having the sequence 5'NNGK3'. Other methods of the invention are directed to selection of target segments within target genes using a correspondence regime between different triplets of three bases and the three possible positions of a triplet within a nine-base site. In another aspect, the invention provides methods of designing zinc finger proteins that bind to a preselected target site. These methods can be used following the preselection of target sites according to the procedures and criteria described above. The methods of design use a database containing information about previously characterized zinc finger proteins.

L1: Entry 8 of 50

File: PGPB

May 15, 2003

DOCUMENT-IDENTIFIER: US 20030092000 A1

TITLE: Selection of sites for targeting by zinc finger proteins and methods of designing zinc finger proteins to bind to preselected sites

Detail Description Paragraph (42):

[0072] Zinc finger proteins can be used to modulate the expression of any target polynucleotide sequence. The sequence can be for example, genomic, cDNA or RNA or an expressed sequence tag (EST). Typically, the target polynucleotide includes a gene or a fragment thereof. The term gene is used broadly to include, for example, exonic regions, intronic regions, 5'UTRs, 3' UTRs, 5' flanking sequences, 3' flanking sequences, promoters, enhancers, transcription start sites, ribosome binding sites, regulatory sites, poly-adenylation sites. Target genes can be cellular, viral or from other sources including purely theoretical sequences. Target gene sequences can be obtained from databases, such as GenBank, the published literature or can be obtained de novo. Target genes include genes from pathological viruses and microorganisms for which repression of expression can be used to abort infection. Examples of pathogenic viruses include hepatitis (A, B, or C), herpes virus (e.g., VZV, HSV-1, HSV-6, HSV-II, and CMV, Epstein Barr virus), HIV, ebola, adenovirus, influenza virus, flaviviruses, echovirus, rhinovirus, coxsackie virus, cornovirus, respiratory syncytial virus, mumps virus, rotavirus, measles virus, rubella virus, parvovirus, vaccinia virus, HTLV virus, dengue virus, papillomavirus, molluscum

virus, poliovirus, rabies virus, JC virus and arboviral encephalitis virus. Some examples of pathogenic bacteria include chlamydia, rickettsial bacteria, mycobacteria, staphylococci, treptococci, pneumonococci, meningococci and conoococci, klebsiella, proteus, serratia, pseudomonas, legionella, diphtheria, salmonella, bacilli, cholera, tetanus, botulism, anthrax, plague, leptospirosis, and Lyme disease bacteria.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#) | [KDDC](#) | [Drawn Desc](#) | [Image](#)

9. Document ID: US 20030082561 A1

L1: Entry 9 of 50

File: PGPB

May 1, 2003

PGPUB-DOCUMENT-NUMBER: 20030082561

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030082561 A1

TITLE: Zinc finger domain recognition code and uses thereof

PUBLICATION-DATE: May 1, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Sera, Takashi	San Diego	CA	US	

US-CL-CURRENT: 435/6; 435/226, 435/320.1, 435/455, 435/69.1, 435/7.1

ABSTRACT:

The present invention relates to DNA binding proteins comprising zinc finger domains in which two histidine and two cysteine residues coordinate a central zinc ion. More particularly, the invention relates to the identification of a context-independent recognition code to design zinc finger domains. This code permits identification of an amino acid for positions -1, 2, 3 and 6 of the .alpha.-helical region of the zinc finger domain from four-base pair nucleotide target sequences. The invention includes zinc finger proteins (ZFPs) designed using this recognition code, nucleic acids encoding these ZFPs and methods of using such ZFPs to modulate gene expression, alter genome structure, inhibit viral replication and detect alterations (e.g., nucleotide substitutions, deletions or insertions) in the binding sites for such proteins. In addition, the invention provides a rapid method of assembling a ZFP with three or more zinc finger domains using three sets of 256 oligonucleotides, where each set is designed to target the 256 different 4-base pair targets and allow production of all possible 3-finger ZFPs (i.e., >>10.sup.6) from a total of 768 oligonucleotides. The invention also is directed to a method of preparing artificial transcription factors.

L1: Entry 9 of 50

File: PGPB

May 1, 2003

DOCUMENT-IDENTIFIER: US 20030082561 A1

TITLE: Zinc finger domain recognition code and uses thereof

Detail Description Paragraph (89):

[0252] The term "expression cassette" as used herein means a DNA sequence capable of directing expression of a particular nucleotide sequence in an appropriate host cell, comprising a promoter operably linked to the nucleotide sequence of interest which is operably linked to termination signals. It also typically comprises sequences required for proper translation of the nucleotide sequence. The coding region usually codes for a protein of interest but may also code for a functional RNA of interest, for example antisense RNA or a nontranslated RNA, in the sense or

antisense direction. The expression cassette comprising the nucleotide sequence of interest may be chimeric, meaning that at least one of its components is heterologous with respect to at least one of its other components. The zinc finger-effector fusions of the present invention are chimeric. The expression cassette may also be one which is naturally occurring but has been obtained in a recombinant form useful for heterologous expression. Typically, however, the expression cassette is heterologous with respect to the host, i.e., the particular DNA sequence of the expression cassette does not occur naturally in the host cell and must have been introduced into the host cell or an ancestor of the host cell by a transformation event. The expression of the nucleotide sequence in the expression cassette may be under the control of a constitutive promoter or of an inducible promoter which initiates transcription only when the host cell is exposed to some particular external stimulus. In the case of a multicellular organism, such as a plant, the promoter can also be specific to a particular tissue or organ or stage of development. In the case of a plastid expression cassette, for expression of the nucleotide sequence from a plastid genome, additional elements, i.e. ribosome binding sites, may be required.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)

[KINIC](#) | [Detail Desc](#) | [Image](#)

10. Document ID: US 20030073888 A1

L1: Entry 10 of 50

File: PGPB

Apr 17, 2003

PGPUB-DOCUMENT-NUMBER: 20030073888

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030073888 A1

TITLE: Screening methods used to identify compounds that modulate a response of a cell to ultraviolet radiation exposure

PUBLICATION-DATE: April 17, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Blumenberg, Miroslav	New York	NY	US	

US-CL-CURRENT: 600/310; 607/3

ABSTRACT:

The cellular response to ultraviolet radiation exposure has been characterized on the molecular level through the use of high density gene array technology. Nucleic acid molecules and protein molecules, the expression of which are repressed or induced in response to ultraviolet radiation exposure, are identified according to a temporal pattern of altered expression post ultraviolet radiation exposure. Methods are disclosed that utilized these ultraviolet radiation-regulated molecules as markers for ultraviolet radiation exposure. Other screening methods of the invention are designed for the identification of compounds that modulate the response of a cell to ultraviolet radiation exposure. The invention also provides compositions useful for drug screening or pharmaceutical purposes.

L1: Entry 10 of 50

File: PGPB

Apr 17, 2003

DOCUMENT-IDENTIFIER: US 20030073888 A1

TITLE: Screening methods used to identify compounds that modulate a response of a cell to ultraviolet radiation exposure

Summary of Invention Paragraph (23):

[0020] In accordance with a further aspect of the invention, there is provided a composition of matter comprising: (1) a plurality of nucleic acid molecules at least 90% identical to the group of polynucleotides regulated by a cell in response to ultraviolet radiation exposure; and (2) a substrate suitable for binding the nucleic acid molecules of (1). The group of polynucleotides regulated by the cell in response to ultraviolet radiation exposure comprises the following: M20030 Human small proline rich protein (sprII) mRNA, clone 930, X53065, M13903 Human involucrin gene, exon 2, L10343 Huma elafin gene, complete cds, M21302 Human small proline rich protein (sprII) mRNA, clone 174N, L05188 H. sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, X70326 Macmarcks, X52426 H. sapiens mRNA for cytokeratin 13, S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, M80254 H. sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, L08069 Human heat shock protein, E. coli DnaJ homolog mRNA, complete cds, U62800 Human cystatin M (CST6) mRNA, complete cds, L24564 Human Rad mRNA, complete cds, M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, Z49989 H. sapiens mRNA for smoothelin, X57985 H. sapiens genes for histones H2B.1 and H2A, L19779 H. sapiens histone H2A.2 mRNA, complete cds, D42040 Human mRNA for KIAA9001 gene, complete cds, M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, X54489 Human gene for melanoma growth stimulatory activity (MGSA), M92934 Human connective tissue growth factor, complete cds, Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, M72885 Human GOS2 gene, 5' flank and cds, X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homolog, X67325 H. sapiens p27 mRNA, U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, M26311 Human cystic fibrosis antigen mRNA, complete cds, L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', AF001294 H. sapiens IPL (IPL) mRNA, complete cds, M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splice, V00594 Human mRNA for metallothionein from cadmium-treated cells, V00599 Tubulin, Beta, X99920 H. sapiens mRNA for S100 calcium-binding protein A13, M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, M37583 Human histone (H2A.Z) mRNA, complete cds, S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], D49824 Human HLA-B null allele mRNA, S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], M90657 Human tumor antigen (L6) mRNA, complete cds, U09937 Human urokinase-type plasminogen receptor, exon 7, X77794 H. sapiens mRNA for cyclin G1, M28130 Human interleukin 8 (IL8) gene, complete cds, X14850 Human H2A.X mRNA encoding histone H2A.X, AB000584 H. sapiens mRNA for TGF-beta superfamily protein, complete cds, U52101 Human YMP mRNA, complete cds, M57731 Human gro-beta mRNA, complete cds, D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, X83416 H. sapiens PrP gene, exon 2, X52882 Human t-complex polypeptide 1 gene, X57351 Human 1-8D gene from interferon-inducible gene family, X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, D38305 Human mRNA for Tob, complete cds, X52979 Human gene for small nuclear ribonucleoproteins SmB and S miB', S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), Z29505 H. sapiens mRNA for nucleic acid binding protein sub2.3, D21853 Human mRNA for KIAA0111 gene, complete cds, X78687 H. sapiens G9 gene encoding sialidase, M13755 Human interferon-induced 17-kD/15-kD protein mRNA, complete cds, M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, M14328 Human alpha enolase mRNA, complete cds, V00599 Tubulin, Beta 2, U90546 Human butyrophilin (BTf4) mRNA, complete cds, K02574, X15729 Human mRNA for nuclear p68 protein, D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, X06956 Tubulin, Alpha 1, Isoform 44, X04654 Human mRNA for U1 RNA-associated 70K protein, M79463 Human PML-2 mRNA, complete CDS, L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genome, Y09022 H. sapiens mRNA for Not56-like protein, X57579 H.

sapiens activin beta-A subunit (exon 2), U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, X61123 Human BTG1 mRNA, J04456 Human 14 kD lectin mRNA, complete cds, Z49254 H. sapiens L23-related mRNA, U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, D86974 Human mRNA for KIAA0220 gene, partial cds, Y07604 H. sapiens mRNA for nucleoside-diphosphate kinase, AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, Y00503 Human mRNA for keratin 19, L26336 Heat Shock Protein, 70 KD (Gb:Y00371), M62831 Human transcription factor ETR101 mRNA, complete cds, Z22548 H. sapiens thiol-specific antioxidant protein mRNA, U40369 Human spermidine/spermine N1-acetyltransferase (SSAT) gene, complete cds, M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, X51345 Human jun-B mRNA for JUN-B protein, Z21507 H. sapiens EF-1delta gene encoding human elongation factor-1-delta, U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, D13413 Human mRNA for tumor-associated 120 kD nuclear protein p120, partial cds(carbox, L42379 H. sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), D86988 Human mRNA for KIAA0221 gene, complete cds, M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, M69043 H. sapiens MAD-3 mRNA encoding IkB-like activity, complete cds, D38251 Human mRNA for RPB5 (XAP4), complete cds, M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), L76200 Human guanylate kinase (GUK1) mRNA, complete cds, M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, U26727 Human p16INK4/MTS 1 mRNA, complete cds, U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, M22960 Human protective protein mRNA, complete cds, D89667 H. sapiens mRNA for c-myc binding protein, complete cds, L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, M19309 Human slow skeletal muscle troponin T mRNA, clone H22h, D64142 Human mRNA for histone H1x, complete cds, U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, U35048 Human TSC-22 protein mRNA, complete cds, X82693 H. sapiens mRNA for E48 antigen, M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, U72649 Human BTG2 (BTG2) mRNA, complete cds, X92896 H. sapiens mRNA for ITBA2 protein, X74104 H. sapiens mRNA for TRAP beta subunit, M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, D15050 Human mRNA for transcription factor AREB6, complete cds, D10923 Human mRNA for HM74, M84739 Human autoantigen calreticulin mRNA, complete cds, U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, X67951 H. sapiens mRNA for proliferation-associated gene (pag), X82200 H. sapiens Staf50 mRNA, L27706 Human chaperonin protein (Tcp20) gene complete cds, U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, M12529 Human apolipoprotein E mRNA, complete cds, X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, U41766 Human metalloprotease/disintegrin/cysteine-rich protein precursor (MDC9) mRNA, c, AF006041 H. sapiens Fas-binding protein (DAXX) mRNA, partial cds, U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds, M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, U13991 Human TATA-binding protein associated factor 30 kD subunit (taffiI30) mRNA, comp, J04794 Human aldehyde reductase mRNA, complete cds, U51586 Human siah binding protein 1 (SiabBP1) mRNA, partial cds, M58026 Human NB-1 mRNA, complete cds, X52425 Human IL-4-R mRNA for the interleukin 4 receptor, X94563 H. sapiens dbi/acbp gene exon 1 & 2, X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, X56681 Human junD mRNA, V01512 Human cellular oncogene c-fos (complete sequence), U09578 H. sapiens MAPKAP kinase (3pK) mRNA, complete cds, L13391 Human helix-loop-helix basic phosphoprotein (G0S8) gene, complete cds, U62317 Chromosome 22q13 BAC Clone CIT987SK-384D8 complete sequence, M16364 Human creatine kinase-B mRNA, complete cds, L19437 Human transaldolase mRNA containing transposable element, complete cds, X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), X52560 Nuclear Factor Nf-I16, X78549 H. sapiens brk mRNA for tyrosine kinase, L11066 Human mRNA sequence, X74008 H. sapiens mRNA for protein phosphatase 1 gamma, X87241 H. sapiens mRNA for hFat protein, S68616 Na+/H+ exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450HVK), complete cds, D86966 Human mnRNA for KIAA0211 gene, complete cds, U17327 Human neuronal nitric oxide synthase (NOS1) mRNA, complete cds, U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, D85527 H. sapiens mRNA for LIM domain, partial cds, L07517 Mucin 6, Gastric (Gb:L07517), M58459 Human ribosomal protein (RPS4Y) isoform

mRNA, complete cds, U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kD subunit, M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, M29064 Human hnRNP B1 protein mRNA, X64330 H. sapiens mRNA for ATP-citrate lyase, X89267 H. sapiens DNA for uroporphyrinogen decarboxylase gene, X91247 H. sapiens mRNA for thioredoxin reductase, L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, X78992 H. sapiens ERF-2 mRNA, L19314 Human HRY gene, complete cds, D90086 Human pyruvate dehydrogenase (EC 1.2.4.1) beta subunit gene, exons 1-10, X12794 Human v-erbA related ear-2 gene, L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, L08246 Human myeloid cell differentiation protein (MCL1) mRNA, L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, L04731 H. sapiens translocation T(4:11) of ALL-1 gene to chromosome 4, D87071 Human mRNA for KIAA0233 gene, complete cds, S74017 Nrf2=NF-E2-like basic leucine zipper transcriptional activator [human, hemin-ind, L41351 H. sapiens prostasin mRNA, complete cds, L00352 Human low density lipoprotein receptor gene, exon 18, D50683 H. sapiens mRNA for TGF-betaIIR alpha, complete cds, X89750 H. sapiens mRNA for TGIF protein, D13988 Human rab GDI mRNA, complete cds, M12886 Human T-cell receptor active beta-chain mRNA, complete cds, M55265 Human casein kinase II alpha subunit mRNA, complete cds, J03161 Human serum response factor (SRF) mRNA, complete cds, M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, U88629 Human RNA polymerase II elongation factor ELL2, complete cds, X04412 Human mRNA for plasma gelsolin, L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, U90716 Human cell surface protein HCAR mRNA, complete cds, M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, compl, Z11585 Potassium Channel Protein (Gb:Z11585), M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, D87442 Human mRNA for KIAA0253 gene, partial cds, M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, U68142 Human Ralgds-like 2 (RGL2) mRNA, partial cds, U88898 Human endogenous retroviral H protease/integrase-derived ORF1 mRNA, complete cds, M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, Z30643 H. sapiens mRNA for chloride channel (putative) 2139bp, X12953 Human rab2 mRNA, YPT1-related and member of ras family, D78129 H. sapiens mRNA for squalene epoxidase, partial cds, U63825 Human hepatitis delta antigen interacting protein A (dipA) mRNA, complete cds, S78825 Id1, M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, X06323 Human MRL3 mRNA for ribosomal protein L3 homolog (MRL3=mammalian ribosome L, D14043 Human mRNA for MGC-24, complete cds, L38951 H. sapiens importin beta subunit mRNA, complete cds, U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, U66616 Human SWI/SNF complex 170 KD subunit (BAF170) mRNA, complete cds, U29607 Human methionine aminopeptidase mRNA, complete cds, D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, D85429 H. sapiens gene for heat shock protein 40, complete cds, M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, X75342 H. sapiens SHB mRNA, D45906 H. sapiens mRNA for LIMK-2, complete cds, X59434 Human rohu mRNA for rhodanese, M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, D79994 Human mRNA for KIAA0172 gene, partial cds, D86965 Human mRNA for KIAA0210 gene, complete cds, Y13647 Stearoyl-Coenzyme Desaturase, X52541 Human mRNA for early growth response protein 1 (hEGR1), Z26317 H. sapiens mRNA for desmoglein 2, M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, D87438 Human mRNA for KIAA0251 gene, partial cds, M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, X80692 H. sapiens ERK3 mRNA, U37122 Human adducin gamma subunit mRNA, complete cds, M83667 Human NF-IL6-beta protein mRNA, complete cds, J05211 Desmoplakin I, D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, X90858 H. sapiens mRNA for uridine phosphorylase, X76717 H. sapiens MT-11 mRNA, Y08915 H. sapiens mRNA for alpha 4 protein, U30999 Human (memc) mRNA, 3'UTR, L77886 Human protein tyrosine phosphatase mRNA, complete cds, U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, U28480 Uncoupling Protein Ucp, X53586 Human mRNA for integrin alpha 6, M64347 Human novel growth factor receptor mRNA, 3' cds, U52100 Human XMP

mRNA, complete cds, D21852 Human mRNA for KIAA0029 gene, partial cds, X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), D87462 Human mRNA for KIAA0272 gene, partial cds, L40391 H. sapiens (clone s153) mRNA fragment, D87469 Human mRNA for KIAA0279 gene, partial cds, S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, L19267 H. sapiens 59 protein mRNA, 3' end, M81601 Human transcription elongation factor (SII) mRNA, complete cds, X52611 Human mRNA for transcription factor AP-2, U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, U09587 Human glycyl-tRNA synthetase mRNA, complete cds, L37127 H. sapiens RNA polymerase II mRNA, complete cds, U52426 H. sapiens GOK (STIM1) mRNA, complete cds, U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, D90209 Human mRNA for DNA binding protein TAXREB67, D83777 Human mRNA for KIAA0193 gene, complete cds, U42031 Human 54 kD progesterone receptor-associated immunophilin FKBP54 mRNA, partial, M80244 Human E16 mRNA, complete cds, D31883 Human mRNA for KIAA0059 gene, complete cds, J04444 Human cytochrome c-1 gene, complete cds, M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds,

Summary of Invention Paragraph (26) :

[0022] In accordance with a further aspect of the invention, there is provided a composition of matter comprising: (1) a plurality of nucleic acid molecules at least 90% identical to the group of polynucleotides regulated by a cell in response to ultraviolet radiation exposure; and (2) a substrate suitable for binding the nucleic acid molecules of (1). The group of polynucleotides regulated by the cell in response to ultraviolet radiation exposure comprises the following: D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, L08069 Human heat shock protein, E. coli DnaJ homolog mRNA, complete cds, X77794 H. sapiens mRNA for cyclin G1, D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, L26336 Heat Shock Protein, 70 KD (Gb:Y00371), M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, U72649 Human BTG2 (BTG2) mRNA, complete cds, X74104 H. sapiens mRNA for TRAP beta subunit, M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, D15050 Human mRNA for transcription factor AREB6, complete cds, U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, U41766 Human metalloprotease/disintegrin/c- ysteine-rich protein precursor (MDC9) mRNA, c, AF006041 H. sapiens Fas-binding protein (DAXX) mRNA, partial cds, U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds, M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, X52425 Human IL-4-R mRNA for the interleukin 4 receptor, X94563 H. sapiens dbi/acbp gene exon 1 & 2, L11066 Human mRNA sequence, X74008 H. sapiens mRNA for protein phosphatase 1 gamma, X87241 H. sapiens mRNA for hFat protein, S68616 Na+/H+ exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450HVK), complete cds, D86966 Human mRNA for KIAA0211 gene, complete cds, U17327 Human neuronal nitric oxide synthase (NOS1) mRNA, complete cds, U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, D85527 H. sapiens mRNA for LIM domain, partial cds, L07517 Mucin 6, Gastric (Gb:L07517), X64330 H. sapiens mRNA for ATP-citrate lyase, X89267 H. sapiens DNA for uroporphyrinogen decarboxylase gene, X91247 H. sapiens mRNA for thioredoxin reductase, L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, X78992 H. sapiens ERF-2 mRNA, L19314 Human HRY gene, complete cds, X12794 Human v-erbA related ear-2 gene, L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, L08246 Human myeloid cell differentiation protein (MCL1) mRNA, L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, D87071 Human mRNA for KIAA0233 gene, complete cds, S74017 Nrf2=NF-E2-like basic leucine zipper transcriptional activator [human, hemin-ind, L41351 H. sapiens prostasin mRNA, complete cds, L00352 Human low density lipoprotein receptor gene, exon 18, D50683 H. sapiens mRNA for TGF-betaIIR

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Splice 3, Orf 114, U88898 Human endogenous retroviral H protease/integrase-derived ORF1 mRNA, complete cds, M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, Z30643 H. sapiens mRNA for chloride channel (putative) 2139bp, X12953 Human rab2 mRNA, YPT1-related and member of ras family, D78129 H. sapiens mRNA for squalene epoxidase, partial cds, S78825 Id1, M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, X06323 Human MRL3 mRNA for ribosomal protein L3 homolog (MRL3=mammalian ribosome L, D14043 Human mRNA for MGC-24, complete cds, U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, U33821 Human taxl-binding protein TXBP151 mRNA, complete cds, U66616 Human SWI/SNF complex 170 KD subunit (BAF170) mRNA, complete cds, U29607 Human methionine aminopeptidase mRNA, complete cds, D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, D85429 H. sapiens gene for heat shock protein 40, complete cds, t M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, X75342 H. sapiens SHB mRNA, t D45906 H. sapiens mRNA for LIMK-2, complete cds, X59434 Human rohu mRNA for rhodanese, M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, D79994 Human mnRNA for KIAA0172 gene, partial cds, D86965 Human mRNA for KIAA0210 gene, complete cds, Y13647 Stearoyl-Coenzyme Desaturase, X52541 Human mRNA for early growth response protein 1 (hEGR1), Z26317 H. sapiens mRNA for desmoglein 2, t M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, D87438 Human mRNA for KIAA0251 gene, partial cds, M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, X80692 H. sapiens ERK3 mRNA, U37122 Human adducin gamma subunit mRNA, complete cds, M83667 Human NF-IL6-beta protein mRNA, complete cds, J05211 Desmoplakin I, D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, X90858 H. sapiens mRNA for uridine phosphorylase, X76717 H. sapiens MT-11 mRNA, Y08915 H. sapiens mRNA for alpha 4 protein, U30999 Human (memc) mRNA, 3'UTR, L77886 Human protein tyrosine phosphatase mRNA, complete cds, U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, U28480 Uncoupling Protein Ucp, X53586 Human mRNA for integrin alpha 6, M64347 Human novel growth factor receptor mRNA, 3' cds, U52100 Human XMP mRNA, complete cds, D21852 Human mRNA for KIAA0029 gene, partial cds, X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), D87462 Human mRNA for KIAA0272 gene, partial cds, L40391 H. sapiens (clone s153) mRNA fragment, D87469 Human mRNA for KIAA0279 gene, partial cds, S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, L19267 H. sapiens 59 protein mRNA, 3' end, M81601 Human transcription elongation factor (SII) mRNA, complete cds, X52611 Human mRNA for transcription factor AP-2, U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, U09587 Human glycyl-tRNA synthetase mRNA, complete cds, L37127 H. sapiens RNA polymerase II mRNA, complete cds, U52426 H. sapiens GOK (STIM1) mRNA, complete cds, U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, D90209 Human mRNA for DNA binding protein TAXREB67, D83777 Human mRNA for KIAA0193 gene, complete cds, U42031 Human 54 kD progesterone receptor-associated immunophilin FKBP54 mRNA, partial, M80244 Human E16 mRNA, complete cds, 134. D31883 Human mRNA for KIAA0059 gene, complete cds, J04444 Human cytochrome c-1 gene, complete cds, M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, M95787 Human 22 kD smooth muscle

protein (SM22) mRNA, complete cds, U00968 Human SREBP-1 MrRNA, complete cds, K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, X77366 H. sapiens HBZ17 mRNA, U53347 Human neutral amino acid transporter B mRNA, complete cds, X80695 H. sapiens OXA1Hs mRNA, J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, S75762 Oncogene Tls/Chop, Fusion Activated, U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, X76534 H. sapiens NMB mRNA, M55268 Human casein kinase II alpha' subunit mRNA, complete cds, M27396 Human asparagine synthetase mRNA, complete cds, U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein, M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, X01630 Human mRNA for argininosuccinate synthetase. This group of ultraviolet radiation-regulated polynucleotides is hereinafter referred to as the "repressed response group" of ultraviolet radiation-regulated polynucleotides.

Summary of Invention Paragraph (34):

[0030] The third response group of this embodiment comprises at least one polynucleotide that is at least 90% identical to a nucleic acid molecule selected from the group consisting of: M20030 Human small proline rich protein (sprlI) mRNA, clone 930, X53065, M13903 Human involucrin gene, exon 2, M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, L10343 Huma elafin gene, complete cds, M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, M21302 Human small proline rich protein (sprl I) mRNA, clone 174N, Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), X57985 H. sapiens genes for histones H2B.1 and H2A, L05188 H. sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, X70326 Macmarcks, X67325 H. sapiens p27 mRNA, L19779 H. sapiens histone H2A.2 mRNA, complete cds, S81914 IEX-1-radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, Z22548 H. sapiens thiol-specific antioxidant protein mRNA, M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, X06956 Tubulin, Alpha 1, Isoform 44, V00594 Human mRNA for metallothionein from cadmium-treated cells, M80254 H. sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, X99920 H. sapiens mRNA for S100 calcium-binding protein A13, U62800 Human cystatin M (CST6) mRNA, complete cds, L08069 Human heat shock protein, E. coli DnaJ homolog mRNA, complete cds, L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, M13755 Human interferon-induced 17-kD/15-kD protein mRNA, complete cds, M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, AF001294 H. sapiens IPL (IPL) mRNA, complete cds, X54489 Human gene for melanoma growth stimulatory activity (MGSA), M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, D42040 Human mRNA for KIAA9001 gene, complete cds, V00599 Tubulin, Beta, U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, M37583 Human histone (H2A.Z) mRNA, complete cds, Z49989 H. sapiens mRNA for smoothelin, L24564 Human Rad mRNA, complete cds, D49824 Human HLA-B null allele mRNA, M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], Z49254 H. sapiens L23-related mRNA, M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splice, U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homolog, D86974 Human mRNA for KIAA0220 gene, partial cds, M72885 Human GOS2 gene, 5' flank and cds, S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, X04654 Human mRNA for U1 RNA-associated 70K protein, t M26311 Human cystic fibrosis antigen mRNA, complete cds, X14850 Human H2A.X mRNA encoding histone H2A.X, M14328 Human alpha enolase mRNA, complete cds, U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, M28130 Human interleukin 8 (IL8) gene, complete cds, Z21507 H. sapiens EF-1delta gene encoding human elongation factor-1-delta, M92934 Human connective tissue growth factor, complete cds, M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, X57351 Human 1-8D gene from interferon-inducible gene

family, X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', U41515 Human deleted in split hand/split foot 1 (DSS 1) mRNA, complete cds, D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, Y00503 Human mRNA for keratin 19, M57731 Human gro-beta mRNA, complete cds, D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, U52101 Human YMP mRNA, complete cds. D13413 Human mRNA for tumor-associated 120 kD nuclear protein p120, partial cds(carbox, L42379 H. sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, X52426 H. sapiens mRNA for cytokeratin 13, J04456 Human 14 kD lectin mRNA, complete cds, S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, U26727 Human p16INK4/MTS1 mRNA, complete cds, X92896 H. sapiens mRNA for ITBA2 protein, Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genome, M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, U09937 Human urokinase-type plasminogen receptor, exon 7, X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, X82693 H. sapiens mRNA for E48 antigen, M58026 Human NB-1 mRNA, complete cds, M90657 Human tumor antigen (L6) mRNA, complete cds, X57579 H. sapiens activin beta-A subunit (exon 2), D38251 Human mRNA for RPB5 (XAP4), complete cds, D89667 H. sapiens mRNA for c-myc binding protein, complete cds, AB000584 H. sapiens mRNA for TGF-beta superfamily protein, complete cds, L76200 Human guanylate kinase (GUK1) mRNA, complete cds, J04794 Human aldehyde reductase mRNA, complete cds, X52882 Human t-complex polypeptide 1 gene, M79463 Human PML-2 mRNA, complete CDS, Y09022 H. sapiens mRNA for Not56-like protein, M12529 Human apolipoprotein E mRNA, complete cds, X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, X83416 H. sapiens PrP gene, exon 2, D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, M16364 Human creatine kinase-B mRNA, complete cds, D38305 Human mRNA for Tob, complete cds, X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), Z29505 H. sapiens mRNA for nucleic acid binding protein sub2.3, K02574, U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, X67951 H. sapiens mRNA for proliferation-associated gene (pag), J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, U09578 H. sapiens MAPKAP kinase (3pK) mRNA, complete cds, X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), V00599 Tubulin, Beta 2, U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), U90546 Human butyrophilin (BT4) mRNA, complete cds, M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kD subunit, X77794 H. sapiens mRNA for cyclin G1, M29064 Human hnRNP B1 protein mRNA, D21853 Human mRNA for KIAA0111 gene, complete cds, X78687 H. sapiens G9 gene encoding sialidase, X15729 Human mRNA for nuclear p68 protein, X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, L40391 H. sapiens (clone s153) mRNA fragment, D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, X74104 H. sapiens mRNA for TRAP beta subunit, M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, L37127 H. sapiens RNA polymerase II mRNA, complete cds, M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, X53586 Human mRNA for integrin alpha 6, t D21852 Human mRNA for KIAA0029 gene, partial cds, L11066 Human mRNA sequence, J04444 Human cytochrome c-1 gene, complete cds, M95787 Human 22 kD smooth muscle protein (SM22) mRNA, complete cds, L07517 Mucin 6, Gastric (Gb:L07517), X91247 H. sapiens mRNA for thioredoxin reductase, L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, U30999 Human (memc) mRNA, 3'UTR, U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, U28480 Uncoupling Protein Ucp, X12794 Human v-erba related ear-2 gene, L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, M12886 Human T-cell receptor active beta-chain mRNA, complete cds, Y08915 H. sapiens mRNA for alpha 4 protein, M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), X76717 H. sapiens MT-11 mRNA, M64347 Human novel growth factor receptor mRNA, 3' cds, X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), D87469 Human mRNA for KIAA0279 gene, partial cds, M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, M76482 Human

130-kD pemphigus vulgaris antigen mRNA, complete cds, X06323 Human MRL3 mRNA for ribosomal protein L3 homolog (MRL3=mammalian ribosome L, X78992 H. sapiens ERF-2 mRNA, L41351 H. sapiens prostasin mRNA, complete cds, X75342 H. sapiens SHB mRNA, U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, U88629 Human RNA polymerase II elongation factor ELL2, complete cds, S78825 Id1, U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, D78129 H. sapiens mRNA for squalene epoxidase, partial cds, D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, Z26317 H. sapiens mRNA for desmoglein 2, L19267 H. sapiens 59 protein mRNA, 3' end, J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, U52100 Human XMP mRNA, complete cds, L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, U52426 H. sapiens GOK (STIM1) mRNA, complete cds, M80244 Human E16 mRNA, complete cds, U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, L77886 Human protein tyrosine phosphatase mRNA, complete cds, M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, X89750 H. sapiens mRNA for TGIF protein, D85429 H. sapiens gene for heat shock protein 40, complete cds, J05211 Desmoplakin I, M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, X80695 H. sapiens OXA1Hs mRNA, M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, D83777 Human mRNA for KIAA0193 gene, complete cds, D31883 Human mRNA for KIAA0059 gene, complete cds, U00968 Human SREBP-1 mRNA, complete cds, K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, D86965 Human mRNA for KIAA0210 gene, complete cds, Z30643 H. sapiens mRNA for chloride channel (putative) 2139bp, D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, D87462 Human mRNA for KIAA0272 gene, partial cds, X80692 H. sapiens ERK3 mRNA, X90858 H. sapiens mRNA for uridine phosphorylase, M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, M81601 Human transcription elongation factor (SII) mRNA, complete cds, X52611 Human mRNA for transcription factor AP-2, U09587 Human glycyl-tRNA synthetase mRNA, complete cds, U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, D90209 Human mRNA for DNA binding protein TAXREB67, X77366 H. sapiens HBZ17 mRNA, X76534 H. sapiens NMB mRNA, U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, M83667 Human NF-IL6-beta protein mRNA, complete cds, U53347 Human neutral amino acid transporter B mRNA, complete cds, L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, M55268 Human casein kinase II alpha' subunit mRNA, complete cds, M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, U42031 Human 54 kD progesterone receptor-associated immunophilin FKBP54 mRNA, partial, M27396 Human asparagine synthetase mRNA, complete cds, X01630 Human mRNA for argininosuccinate synthetase, D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein.

#### Detail Description Table CWU (17):

9TABLE 9 Ultraviolet Radiation-Regulated Repressed Gene Set Repressed Gene Set  
 D50840\_at D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds.  
 L08069\_at L08069 Human heat shock protein, E. coli Dnaj homolog mRNA, complete cds.  
 X77794\_at X77794 H. sapiens mRNA for cyclin G1. D89052\_at D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds. HG2855-HT2995\_at L26336 Heat Shock Protein, 70 KD (Gb:Y00371) M30703\_s\_at M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12). L16862\_at L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds. M92843\_s\_at M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds. U72649\_at U72649 Human BTG2 (BTG2) mRNA, complete cds. X74104\_at X74104 H. sapiens mRNA for TRAP beta subunit.  
 M84332\_at M84332 Human ADP-ribosylation factor 1 gene, exons 2-5. D15050\_at D15050 Human mRNA for transcription factor AREB6, complete cds. U28386\_at U28386 Human nuclear localization sequence receptor HSRPlalpha mRNA, complete cds. U41766\_s\_at U41766 Human metalloprotease/disintegrin/cysteine-rich protein precursor (MDC9)

mRNA, c AF006041\_at AF006041 H. sapiens Fas-binding protein (DAXX) mRNA, partial cds. U28749\_s\_at U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds. M60483\_rna1\_s\_at M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds. U07664\_at U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds. X52425\_at X52425 Human IL-4-R mRNA for the interleukin 4 receptor. X94563\_xpt2\_r\_at X94563 H. sapiens dbi/acbp gene exon 1 & 2. L11066\_at L11066 Human mRNA sequence. X74008\_at X74008 H. sapiens mRNA for protein phosphatase 1 gamma. X87241\_at X87241 H. sapiens mRNA for hFat protein. S68616\_at S68616 Na+/H+ exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt]. D13705\_s\_at D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450Hkv), complete cds D86966\_at D86966 Human mRNA for KIAA0211 gene, complete cds. U17327\_at U17327 Human neuronal nitric oxide synthase (NOS1) mRNA, complete cds. U89336\_cds4\_at U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB D85527\_at D85527 H. sapiens mRNA for LIM domain, partial cds. HG880-HT880\_at L07517 Mucin 6, Gastric (Gb:L07517) X64330\_at X64330 H. sapiens mRNA for ATP-citrate lyase. X89267\_at X89267 H. sapiens DNA for uroporphyrinogen decarboxylase gene. X91247\_at X91247 H. sapiens mRNA for thioredoxin reductase. L11672\_at L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds. X78992\_at X78992 H. sapiens ERF-2 mRNA. L19314\_at L19314 Human HRY gene, complete cds. X12794\_at X12794 Human v-erbA related ear-2 gene. L22005\_at L22005 Human ubiquitin conjugating enzyme mRNA, partial cds. U01337\_at U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds. M34182\_at M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds. L08246\_at L08246 Human myeloid cell differentiation protein (MCL1) mRNA. L37042\_at L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds. D87071\_at D87071 Human mRNA for KIAA0233 gene, complete cds. S74017\_at S74017 Nrf2 = NF-E2-like basic leucine zipper transcriptional activator [human, hemin-ind L41351\_at L41351 H. sapiens prostasin mRNA, complete cds. L00352\_at L00352 Human low density lipoprotein receptor gene, exon 18. D50683\_at D50683 H. sapiens mRNA for TGF-beta1IR alpha, complete cds. X89750\_at X89750 H. sapiens mRNA for TGIF protein. D13988\_at D13988 Human rab GDI mRNA, complete cds. M12886\_at M12886 Human T-cell receptor active beta-chain mRNA, complete cds. M55265\_at M55265 Human casein kinase II alpha subunit mRNA, complete cds. J03161\_at J03161 Human serum response factor (SRF) mRNA, complete cds. M58286\_s\_at M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds. U88629\_at U88629 Human RNA polymerase II elongation factor ELL2, complete cds. U90716\_at U90716 Human cell surface protein HCAR mRNA, complete cds. HG3638-HT3849\_s\_at M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751) U05875\_at U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, compl M58603\_at M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds D87442\_at D87442 Human mRNA for KIAA0253 gene, partial cds. M76482\_at M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds. U56418\_at U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds. HG3523-HT4899\_s\_at J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114 U88898\_r\_at U88898 Human endogenous retroviral H protease/ integrase-derived ORF1 mRNA, complete cds M91083\_at M91083 Human DNA-binding protein (HRC1) mRNA, complete cds. Z30643\_at Z30643 H. sapiens mRNA for chloride channel (putative) 2139bp. X12953\_at X12953 Human rab2 mRNA, YPT1-related and member of ras family. D78129\_at D78129 H. sapiens mRNA for squalene epoxidase, partial cds. HG3342-HT3519\_s\_at S78825 Id1 M54915\_s\_at M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds. X06323\_at X06323 Human MRL3 mRNA for ribosomal protein L3 homolog (MRL3 = mammalian ribosome L D14043\_at D14043 Human mRNA for MGC-24, complete cds. U34252\_at U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds. M13829\_s\_at M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds. U33821\_at U33821 Human tax1-binding protein TXBP151 mRNA, complete cds. U66616\_at U66616 Human SWI/SNF complex 170 KD subunit (BAF170) mRNA, complete cds. U29607\_at U29607 Human methionine aminopeptidase mRNA, complete cds. D14520\_at D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds. D14874\_at D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds. D85429\_at D85429 H. sapiens gene for heat shock protein 40, complete cds. M69181\_at M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds. U60205\_at U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds. X75342\_at X75342 H. sapiens SHB mRNA. D45906\_at D45906 H. sapiens mRNA for LIMK-2, complete cds. X59434\_at X59434 Human rohu mRNA for rhodanese. M96803\_at M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds. D79994\_at D79994 Human mRNA for KIAA0172 gene, partial cds. D86965\_at D86965 Human mRNA for KIAA0210 gene, complete cds. HG3930-HT4200\_at Y13647 Stearoyl-Coenzyme A Desaturase X52541\_at X52541 Human mRNA

for early growth response protein 1 (hEGR1). Z26317\_at Z26317 H. sapiens mRNA for desmoglein 2. M57763\_at M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds. L38490\_s\_at L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds. D87438\_at D87438 Human mRNA for KIAA0251 gene, partial cds. M31627\_at M31627 Human X box binding protein-1 (XPB-1) mRNA, complete cds. X80692\_at X80692 H. sapiens ERK3 mRNA. U37122\_at U37122 Human adducin gamma subunit mRNA, complete cds. M83667\_rna1\_s\_at M83667 Human NF-IL6-beta protein mRNA, complete cds. HG174-HT174\_at J05211 Desmoplakin I D42123\_at D42123 H. sapiens mRNA for ESP1/CRP2, complete cds. X90858\_at X90858 H. sapiens mRNA for uridine phosphorylase. X76717\_at X76717 H. sapiens MT-11 mRNA. Y08915\_at Y08915 H. sapiens mRNA for alpha 4 protein. U30999\_at U30999 Human (memc) mRNA, 3'UTR. L77886\_at L77886 Human protein tyrosine phosphatase mRNA, complete cds. U14603\_at U14603 Human protein-tyrosine phosphatase (HU-PP-1)

## CLAIMS:

15. The method according to claim 1, wherein: (a) the nucleic acid molecule expressed in the first response further comprises a nucleic acid molecule that is at least 90% identical to a nucleic acid molecule selected from the group consisting of: (i) M62831 Human transcription factor ETR101 mRNA, complete cds, (ii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (iii) L04731 H. sapiens translocation T(4;11) of ALL-1 gene to chromosome 4, (iv) X56681 Human junD mRNA, (v) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (vi) L38951 H. sapiens importin beta subunit mRNA, complete cds, (vii) D87071 Human mRNA for KIAA0233 gene, complete cds, (viii) M72885 Human GOS2 gene, 5' flank and cds, (ix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (x) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, (xi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (xii) D86988 Human mRNA for KIAA0221 gene, complete cds, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) U62317 Chromosome 22q13 BAC Clone CIT987SK-384D8 complete sequence, (xv) X04412 Human mRNA for plasma gelsolin, (xvi) L27706 Human chaperonin protein (Tcp20) gene complete cds, (xvii) X61123 Human BTG1 mRNA, (xviii) M60974growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xix) L19437 Human transaldolase mRNA containing transposable element, complete cds, (xx) X57985 H. sapiens genes for histones H2B.1 and H2A, (xxi) D90086 Human pyruvate dehydrogenase (EC 1.2.4.1) beta subunit gene, exons 1-10, (xxii) M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, (xxiii) L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, (xxiv) D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450HVK), complete cd, (xxv) U37122 Human adducin gamma subunit mRNA, complete cds, (xxvi) D45906 H. sapiens mRNA for LIMK-2, complete cds, (xxvii) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (xxviii) D87438 Human mRNA for KIAA0251 gene, partial cds, (xxix) L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, (xxx) D14043 Human mRNA for MGC-24, complete cds, (xxxii) D13988 Human rab GDI mRNA, complete cds, (xxxiii) U28480 Uncoupling Protein Uc, (xxxiv) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (xxxv) M55265 Human casein kinase II alpha subunit mRNA, complete cds, (xxxvi) M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, (xxxvii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox P, (xxxviii) D87442 Human mRNA for KIAA0253 gene, partial cds, (xxxix) J03161 Human serum response factor (SRF) mRNA, complete cds, (xl) D86965 Human mRNA for KIAA0210 gene, complete cds, (xli) U17327 Human neuronal nitric oxide synthase (NOS1) mRNA, complete cds, (xlii) D86966 Human mRNA for KIAA0211 gene, complete cds, (xliii) D85527 H. sapiens mRNA for LIM domain, partial cds, (xliii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBPs4 mRNA, partial, (xlv) X59434 Human rohu mRNA for rhodanese, (xlvi) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, and (xlvi) J05211 Desmoplakin; (b) the nucleic acid molecule expressed in the second response further comprises a nucleic acid molecule that is at least 90% identical to a nucleic acid molecule selected from the group consisting of: (i) M57731 Human gro-beta mRNA, complete cds, (ii) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (iii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (iv) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (v) M72885 Human GOS2 gene, 5' flank and cds, (vi) M62831 Human transcription factor ETR101 mRNA, complete cds, (vii) M28130 Human interleukin 8 (IL8) gene, complete cds, (viii) X57985 H. sapiens genes for histones H2B.1 and H2A, (ix) X53800 Human mRNA for macrophage inflammatory

protein-2beta (MIP2beta), (x) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xi) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xii) X56681 Human jund mRNA, (xiii) S75762 Oncogene Tls/Chop, Fusion Activate, (xiv) M84739 Human autoantigen calreticulin mRNA, complete cds, (xv) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (xvi) V00599 Tubulin, Bet, (xvii) X70326 Macmarck, (xviii) D10923 Human mRNA for HM74, (xix) D64142 Human mRNA for histone H1x, complete cds, (xx) D86974 Human mRNA for KIAA0220 gene, partial cds, (xxi) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xxii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (xxiii) L13391 Human helix-loop-helix basic phosphoprotein (GOS8) gene, complete cds, (xxiv) M31627 Human X box binding protein-1 (XBPA-1) mRNA, complete cds, (xxv) U40369 Human spermidine/spermine N1-acetyltransferase (SSAT) gene, complete cds, (xxvi) X52560 Nuclear Factor Nf-Il, (xxvii) X61123 Human BTG1 mRNA, (xxviii) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (xxix) U35048 Human TSC-22 protein mRNA, complete cds, (xxx) M69043 H. sapiens MAD-3 mRNA encoding IkB-like activity, complete cds, (xxxii) X51345 Human jun-B mRNA for JUN-B protein, (xxxii) S68616 Na+/H+ exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], (xxxiii) X89750 H. sapiens mRNA for TGIF protein, (xxxiv) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein, (xxxv) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (xxxvi) X52541 Human mRNA for early growth response protein 1 (hEGR1), (xxxvii) D50683 H. sapiens mRNA for TGF-betaIIIR alpha, complete cds, (xxxviii) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (xxxix) X91247 H. sapiens mRNA for thioredoxin reductase, (xl) U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, comp, (xli) L19314 Human HRY gene, complete cds, (xlii) M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), (xliii) U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, (xliv) S78825 Id1, (xlv) D85429 H. sapiens gene for heat shock protein 40, complete cds, (xlvi) U41766 Human metalloprotease/disintegrin/cysteine-rich protein precursor (MDC9) mRNA, (xlvii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, (xlviii) M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, (xlix) D15050 Human mRNA for transcription factor AREB6, complete cds, (l) U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, (li) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (lii) X64330 H. sapiens mRNA for ATP-citrate lyase, (liii) U37122 Human adducin gamma subunit mRNA, complete cds, (liv) X74008 H. sapiens mRNA for protein phosphatase 1 gamma, (lv) U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, (lvi) X76534 H. sapiens NMB mRNA, (lvii) D87071 Human mRNA for KIAA0233 gene, complete cds, (lviii) U90716 Human cell surface protein HCAR mRNA, complete cds, (lix) M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, (lx) U29607 Human methionine aminopeptidase mRNA, complete cds, (lxi) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (lxii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (lxiii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (lxiv) X12953 Human rab2 mRNA, YPT1-related and member of ras family, (lxv) M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, (lxvi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (lxvii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (lxviii) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (lxix) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (lxxi) S74017 Nrf2=NF-E2-like basic leucine zipper transcriptional activator [human, hemin-in, (lxxii) X87241 H. sapiens mRNA for hFat protein, (lxxiii) X52425 Human IL-4-R mRNA for the interleukin 4 receptor, (lxxiv) D79994 Human mRNA for KIAA0172 gene, partial cds, (lxxv) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (lxxvi) M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, (lxxvii) X78992 H. sapiens ERF-2 mRNA, (lxxviii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (lxxix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (lxxx) X52611 Human mRNA for transcription factor AP-2, (lxxxii) U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds, (lxxxii) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (lxxxiii) L26336 Heat Shock Protein, 70 Kda (Gb:Y00371, (lxxxiv) L08246 Human myeloid cell differentiation protein (MCL1) mRNA, (lxxxv) S73591 brain-expressed HHCPC78 homolog [human, HL-60 acute promyelocytic,leukemia cells (lxxxvi) J05211 Desmoplakin, (lxxxvii) L00352 Human low density lipoprotein receptor gene, exon 18, (lxxxviii) Y13647 Stearoyl-Coenzyme A

Desaturase, (lxxxix) X77794 H. sapiens mRNA for cyclin G1, (xc) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (xci) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (xcii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (xciii) X80692 H. sapiens ERK3 mRNA, and (xciv) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114; and (c) the nucleic acid molecule expressed in the third response further comprises a nucleic acid molecule that is at least 90% identical to a nucleic acid molecule selected from the group consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Huma elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H. sapiens genes for histones H2B.1 and H2A, (x) L05188 H. sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H. sapiens p27 mRNA, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H. sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H. sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H. sapiens mRNA for S100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coliDnaj homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxi) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxii) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxiii) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H. sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xlii) Z49254 H. sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splice, (xliv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv) AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlvi) X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlix) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (l) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H. sapiens EF-1 delta gene encoding human elongation factor-1-delta, (lvii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, (lx) X52979 Human l-8D gene from interferon-inducible gene family, (lxi) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19, (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds(carbox, (lxix) L42379 H. sapiens bone-derived growth

factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H. sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p16INK4/MTS1 mRNA, complete cds, (lxxv) X92896 H. sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genome, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxi) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxii) U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiii) X82693 H. sapiens mRNA for E48 antigen, (lxxxiv) M58026 Human NB-1 mRNA, complete cds, (lxxxv) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvi) X57579 H. sapiens activin beta-A subunit (exon 2), (lxxxvii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxviii) D89667 H. sapiens mRNA for c-myc binding protein, complete cds, (lxxxix) AB000584 H. sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci) J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H. sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H. sapiens PrP gene, exon 2, (xcviii) D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human creatine kinase-B mRNA, complete cds, (ci) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505 H. sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cvi) X67951 H. sapiens mRNA for proliferation-associated gene (pag), (cvii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 H. sapiens MAPKAP kinase (3pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTf4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579

Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kDa subunit, (cxvii) X77794 H. sapiens mRNA for cyclin G1, (cxviii) M29064 Human hnRNP B1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H. sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 H. sapiens (clone s153) mRNA fragment, (cxxv) D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H. sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 H. sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxxx) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxii) JA8546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxiii) X53586 Human mRNA for integrin alpha 6, (cxxxiii) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxiv) L11066 Human mRNA sequence, (cxxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxxvi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxxvii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxxviii) X91247 H. sapiens mRNA for thioredoxin reductase, (cxxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF- 1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlvii) Y08915 H. sapiens mRNA for alpha 4 protein, (cxlviii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H. sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cl) X05409 Human RNA for

mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue (MRL3=mammalian ribosome L, (clv) X78992 H. sapiens ERF-2 mRNA, (clvi) L41351 H. sapiens prostasin mRNA, complete cds, (clvii) X75342 H. sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H. sapiens mRNA for desmoglein 2, (clxvi) L19267 H. sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 H. sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H. sapiens mRNA for TGIF protein, (clxxx) D85429 H. sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxii) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (clxxxiii) X80695 H. sapiens OXA1Hs mRNA, (clxxxiv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxv) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvi) D31883 Human mRNA for KIAA0059 gene, complete cds, (clxxxvii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxviii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H. sapiens mRNA for chloride channel (putative) 2139 bp, (cxci) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxcii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciii) X80692 H. sapiens ERK3 mRNA, (cxciv) X90858 H. sapiens mRNA for uridine phosphorylase, (cxcv) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvi) X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcviii) X52611 Human mRNA for transcription factor AP-2, (cxcix) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H. sapiens HBZ17 mRNA, (cciii) X76534 H. sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrrolidine 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, (ccxiii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X69111 H. sapiens HLH 1R21 mRNA.

26. The method according to claim 25, wherein the compound inhibits at least one nucleic acid molecule repressed in the first response, the second response, or the third response that is at least 90% identical to a polynucleotide selected from the group consisting of: (i) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (ii) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (iii) X77794 H. sapiens mRNA for cyclin G1, (iv) D89052 H. sapiens

mRNA for proton-ATPase-like protein, complete cds, (v) L26336 Heat Shock Protein, 70 Kda (Gb:Y00371), (vi) M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), (vii) L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, (viii) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (ix) U72649 Human BTG2 (BTG2) mRNA, complete cds, (x) X74104 H. sapiens mRNA for TRAP beta subunit, (xi) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (xii) D15050 Human mRNA for transcription factor AREB6, complete cds, (xiii) U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, (xiv) U41766 Human metalloprotease/disinte-grin/cysteine-rich protein- precursor (MDC9) mRNA, c, (xv) AF006041 H. sapiens Fas-binding protein (DAXX) mRNA, partial cds, (xvi) U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds, (xvii) M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, (xviii) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (xix) X52425 Human IL-4-R mRNA for the interleukin 4 receptor, (xx) X94563 H. sapiens dbl/acbp gene exon 1 &2, (xxi) L11066 Human mRNA sequence, (xxii) X74008 H. sapiens mRNA for protein phosphatase 1 gamma, (xxiii) X87241 H. sapiens mRNA for hFat protein, (xxiv) S68616 Na+/H+ exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], (xxv) D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450HKV), complete cds, (xxvi) D86966 Human mRNA for KIAA0211 gene, complete cds, (xxvii) U17327 Human neuronal nitric oxide synthase (NOS1) mRNA, complete cds, (xxviii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, (xxix) D85527 H. sapiens mRNA for LIM domain, partial cds, (xxx) L07517 Mucin 6, Gastric (Gb:L07517), (xxxi) X64330 H. sapiens mRNA for ATP-citrate lyase, (xxxii) X89267 H. sapiens DNA for uroporphyrinogen decarboxylase gene, (xxxiii) X91247 H. sapiens mRNA for thioredoxin reductase, (xxxiv) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (xxxv) X78992 H. sapiens ERF-2 mRNA, (xxxvi) L19314 Human HRY gene, complete cds, (xxxvii) X12794 Human v-erbA related ear-2 gene, (xxxviii) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (xxxix) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds. (xl) M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, (xli) L08246 Human myeloid cell differentiation protein (MCL1) mRNA, (xlii) L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, (xliii) D87071 Human mRNA for KIAA0233 gene, complete cds, (xliv) S74017 Nrf2=NF-E2-like basic leucine zipper transcriptional activator [human, hemin-ind, (xlv) L41351 H. sapiens prostasin mRNA, complete cds, (xlvi) L00352 Human low density lipoprotein receptor gene, exon 18, (xlvii) D50683 H. sapiens mRNA for TGF-betaIIR alpha, complete cds, (xlviii) X89750 H. sapiens mRNA for TGIF protein, (xlix) t D13988 Human rab GDI mRNA, complete cds, (l) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (li) M55265 Human casein kinase II alpha subunit mRNA, complete cds, (lii) J03161 Human serum response factor (SRF) mRNA, complete cds, (liii) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (liv) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (lv) U90716 Human cell surface protein HCAR mRNA, complete cds, (lvi) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (lvii) U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, compl, (lviii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (lix) D87442 Human mRNA for KIAA0253 gene, partial cds, (lx) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (lxi) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (lxii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (lxiii) U88898 Human endogenous retroviral H protease/integrase-derived ORF1 mRNA, complete cds, (lxiv) M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, (lxv) Z30643 H. sapiens mRNA for chloride channel (putative) 2139 bp, (lxvi) X12953 Human rab2 mRNA, YPT1-related and member of ras family, (lxvii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (lxviii) S78825 Id1, (lxix) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (lxx) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue (MRL3=mammalian ribosome L, (lxxi) D14043 Human mRNA for MGC-24, complete cds, (lxxii) U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, (lxxiii) M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, (lxxiv) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (lxxv) U66616 Human SWI/SNF complex 170 KDa subunit (BAF170) mRNA, complete cds, (lxxvi) U29607 Human methionine aminopeptidase mRNA, complete cds, (lxxvii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (lxxviii) D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, (lxxix) D85429 H. sapiens gene for heat shock protein 40, complete cds, (lxxx) t M69181 Human nonmuscle myosin heavy chain-B

(MYH10) mRNA, partial cds, (lxxxii) U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, (lxxxiii) X75342 H. sapiens SHB mRNA, (lxxxiv) t D45906 H. sapiens mRNA for LIMK-2, complete cds, (lxxxv) X59434 Human rohu mRNA for rhodanese, (lxxxvi) M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, (lxxxvii) D79994 Human mRNA for KIAA0172 gene, partial cds, (lxxxviii) D86965 Human mRNA for KIAA0210 gene, complete cds, (lxxxix) Y13647 Stearoyl-Coenzyme Desaturase, (lxxxi) X52541 Human mRNA for early growth response protein 1 (hEGR1), (xc) Z26317 H. sapiens mRNA for desmoglein 2, (xci) t M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (xcii) L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, (xciii) D87438 Human mRNA for KIAA0251 gene, partial cds, (xciv) M31627 Human X box binding protein-1 (XPB-1) mRNA, complete cds, (xcv) X80692 H. sapiens ERK3 mRNA, (xcvi) U37122 Human adducin gamma subunit mRNA, complete cds, (xcvii) M83667 Human NF-IL6-beta protein mRNA, complete cds, (xcviii) J05211 Desmoplakin I, (xcix) D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, (c) X90858 H. sapiens mRNA for uridine phosphorylase, (ci) X76717 H. sapiens MT-11 mRNA, (cii) Y08915 H. sapiens mRNA for alpha 4 protein, (ciii) U30999 Human (memc) mRNA, 3'UTR, (civ) L77886 Human protein tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (cv) U28480 Uncoupling Protein Ucp, (cvii) X53586 Human mRNA for integrin alpha6, (cviii) M64347 Human novel growth factor receptor mRNA, 3' cds, (cix) U52100 Human XMP mRNA, complete cds, (cx) D21852 Human mRNA for KIAA0029 gene, partial cds, (cxi) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cxii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxiii) L40391 H. sapiens (clone s153) mRNA fragment, (cxiv) D87469 Human mRNA for KIAA0279 gene, partial cds, (cxv) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (cxvi) L19267 H. sapiens 59 protein mRNA, 3' end, (cxvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxviii) X52611 Human mRNA for transcription factor AP-2, (cxix) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (cxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (cxxi) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (cxxii) L48546 H. sapiens tuber (TSC2) gene, exons 38, 39, 40 and 41, (cxxiii) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (cxxiv) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cxxv) L37127 H. sapiens RNA polymerase II mRNA, complete cds, (cxxvi) U52426 H. sapiens GOK (STIM1) mRNA, complete cds, (cxxvii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (cxxviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (cxxix) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (cxx) D90209 Human mRNA for DNA binding protein TAXREB67, (cxxxi) D83777 Human mRNA for KIAA0193 gene, complete cds, (cxxxi) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (cxxxi) M80244 Human E16 mRNA, complete cds, (cxxxiv) D31883 Human mRNA for KIAA0059 gene, complete cds, (cxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxvi) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (cxxvii) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxviii) U00968 Human SREBP-1 mRNA, complete cds, (cxxix) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (cxl) X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxli) X77366 H. sapiens HBZ17 mRNA, (cxlii) U53347 Human neutral amino acid transporter B mRNA, complete cds, (cxliii) X80695 H. sapiens OXA1Hs mRNA, (cxliv) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, (cxlv) S75762 Oncogene Tls/Chop, Fusion Activated, (cxlvii) U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, (cxlviii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (cxlvii) X76534 H. sapiens NMB mRNA, (cxlix) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (cl) M27396 Human asparagine synthetase mRNA, complete cds, (cli) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (cli) X691 11 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein, (clii) M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, (cliv) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (clv) X01630 Human mRNA for argininosuccinate synthetase.

30. The pharmaceutical composition of claim 27, wherein the nucleic acid molecule expressed in the third response further comprises a nucleic acid molecule that is at least 90% identical to a nucleic acid molecule selected from the group consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain,

Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Huma elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H. sapiens genes for histones H2B.1 and H2A, (x) L05188 H. sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H. sapiens p27 mRNA, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H. sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H. sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H. sapiens RNA for S100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxi) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxii) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxiii) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H. sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xlii) Z49254 H. sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splice, (xliv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv) AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlvi) X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlix) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (l) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H. sapiens EF-1delta gene encoding human elongation factor-1-delta, (lvii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lxi) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19. (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds(carbox, (lxix) L42379 H. sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H. sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p16INK4/MTS 1 mRNA, complete cds, (lxxv) X92896 H. sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genome, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome

c oxidase (EC 1.9.3.1.), (lxxxii) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxiii) U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiv) X82693 H. sapiens mRNA for E48 antigen, (lxxxv) M58026 Human NB-1 mRNA, complete cds, (lxxxvi) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvii) X57579 H. sapiens activin beta-A subunit (exon 2), (lxxxviii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxix) AB000584 H. sapiens mRNA for c-myc binding protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci) J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H. sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H. sapiens PrP gene, exon 2, (xcviii) D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human creatine kinase-B mRNA, complete cds, (ci) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505 H. sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cvi) X67951 H. sapiens mRNA for proliferation-associated gene (pag), (cvii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 H. sapiens MAPKAP kinase (3pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTF4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kDa subunit, (cxvii) X77794 H. sapiens mRNA for cyclin G1, (cxviii) M29064 Human hnRNP B 1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H. sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind), (cxxiii) L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 H. sapiens (clone s153) mRNA fragment, (cxxv) D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H. sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 H. sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxxxi) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxi) L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxi) X53586 Human mRNA for integrin alpha 6, (cxxxi) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxiv) L11066 Human mRNA sequence, (cxxxi) J04444 Human cytochrome c-1 gene, complete cds, (cxxxi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxvii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxviii) X91247 H. sapiens mRNA for thioredoxin reductase, (cxxxi) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlv) Y08915 H. sapiens mRNA for alpha 4 protein, (cxlvii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H. sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cli) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue (MRL3=mammalian ribosome L, (clv) X78992 H. sapiens ERF-2 mRNA, (clvi) L41351 H. sapiens prostasin mRNA, complete cds, (clvii) X75342 H. sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 H. sapiens mRNA for

squalene epoxidase, partial cds, (clxiv) D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z226317 H. sapiens mRNA for desmoglein 2, (clxvi) L19267 H. sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 H. sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H. sapiens mRNA for TGIF protein, (clxxx) D85429 H. sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxii) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (clxxxiii) X80695 H. sapiens OXA1Hs mRNA, (clxxxiv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxv) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvi) D31883 Human mRNA for KIAA0059 gene, complete cds, (clxxxvii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxviii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H. sapiens RNA for chloride channel (putative) 2139 bp, (cxci) D14520 Human m-RNA for GC-Box binding protein BTEB2, complete cds, (cxcii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciii) X80692 H. sapiens ERK3 mRNA, (cxciv) X90858 H. sapiens mRNA for uridine phosphorylase, (cxcv) M57763 Human ADP-ribosylation factor (hARF6) RNA, complete cds, (cxcvi) X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcviii) X52611 Human mRNA for transcription factor AP-2, (cxcix) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H. sapiens HBZ17 mRNA, (cciii) X76534 H. sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrrole 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, (ccxiii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein.

40. The screening method of claim 33, wherein: (a) the protein expressed in the first response further comprises a protein that is encoded by a polynucleotide that is at least 90% identical to a nucleic acid molecule selected from the group consisting of: (i) M62831 Human transcription factor ETR101 mRNA, complete cds, (ii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (iii) L04731 H. sapiens translocation T(4:11) of ALL-1 gene to chromosome 4, (iv) X56681 Human junD mRNA, (v) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (vi) L38951 H. sapiens importin beta subunit mRNA, complete cds, (vii) D87071 Human mRNA for KIAA0233 gene, complete cds, (viii) M72885 Human GOS2 gene, 5' flank and cds, (ix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (x) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, (xi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (xii) D86988 Human mRNA for KIAA0221 gene, complete cds, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) U62317 Chromosome 22q13 BAC Clone CIT987SK-384D8 complete sequence, (xv) X04412 Human mRNA for plasma gelsolin, (xvi) L27706 Human chaperonin protein (Tcp20) gene complete cds, (xvii) X61123 Human BTG1 mRNA, (xviii)

M60974 growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xix) L19437 Human transaldolase mRNA containing transposable element, complete cds, (xx) X57985 H. sapiens genes for histones H2B.1 and H2A, (xxi) D90086 Human pyruvate dehydrogenase (EC 1.2.4.1) beta subunit gene, exons 1-10, (xxii) M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, (xxiii) L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, (xxiv) D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450HVK), complete cd, (xxv) U37122 Human adducin gamma subunit mRNA, complete cds, (xxvi) D45906 H. sapiens mRNA for LIMK-2, complete cds, (xxvii) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (xxviii) D87438 Human mRNA for KIAA0251 gene, partial cds, (xxix) L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, (xxx) D14043 Human mRNA for MGC-24, complete cds, (xxxi) D13988 Human rab GDI mRNA, complete cds, (xxxii) U28480 Uncoupling Protein Uc, (xxxiii) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (xxxiv) M55265 Human casein kinase II alpha subunit mRNA, complete cds, (xxxv) M96803 Human general beta-spectrin (SPTBN1) mRNA; complete cds, (xxxvi) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox P, (xxxvii) D87442 Human mRNA for KIAA0253 gene, partial cds, (xxxviii) J03161 Human serum response factor (SRF) mRNA, complete cds, (xxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (xl) U17327 Human neuronal nitric oxide synthase (NOS1) mRNA, complete cds, (xli) D86966 Human mRNA for KIAA0211 gene, complete cds, (xlii) D85527 H. sapiens mRNA for LIM domain, partial cds, (xliii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (xliv) X59434 Human rohu mRNA for rhodanese, (xlv) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, and (xlvi) J05211 Desmoplakin; (b) the protein expressed in the second response further comprises a protein that is encoded by a polynucleotide that is at least 90% identical to a nucleic acid molecule selected from the group consisting of: (i) M57731 Human gro-beta mRNA, complete cds, (ii) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (iii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (iv) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (v) M72885 Human GOS2 gene, 5' flank and cds, (vi) M62831 Human transcription factor ETR101 mRNA, complete cds, (vii) M28130 Human interleukin 8 (IL8) gene, complete cds, (viii) X57985 H. sapiens genes for histones H2B.1 and H2A, (ix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (x) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xi) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xii) X56681 Human junD mRNA, (xiii) S75762 Oncogene Tls/Chop, Fusion Activate, (xiv) M84739 Human autoantigen calreticulin mRNA, complete cds, (xv) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (xvi) V00599 Tubulin, Bet, (xvii) X70326 Macmarck, (xviii) D10923 Human mRNA for HM74, (xix) D64142 Human mRNA for histone H1x, complete cds, (xx) D86974 Human mRNA for KIAA0220 gene, partial cds, (xxi) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xxii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (xxiii) L13391 Human helix-loop-helix basic phosphoprotein (GOS8) gene, complete cds, (xxiv) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (xxv) U40369 Human spermidine/spermine N1-acetyltransferase (SSAT) gene, complete cds, (xxvi) X52560 Nuclear Factor Nf-Il, (xxvii) X61123 Human BTG1 mRNA, (xxviii) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (xxix) U35048 Human TSC-22 protein mRNA, complete cds, (xxx) M69043 H. sapiens MAD-3 mRNA encoding IkB-like activity, complete cds, (xxxi) X51345 Human jun-B mRNA for JUN-B protein, (xxxii) S68616 Na+/H+ exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], (xxxiii) X89750 H. sapiens mRNA for TGIF protein, (xxxiv) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein, (xxxv) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (xxxvi) X52541 Human mRNA for early growth response protein 1 (hEGR1), (xxxvii) D50683 H. sapiens mRNA for TGF-betaIIIR alpha, complete cds, (xxxviii) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (xxxix) X91247 H. sapiens mRNA for thioredoxin reductase, (xl) U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, comp, (xli) L19314 Human HRY gene, complete cds, (xlii) M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), (xliii) U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, (xliv) S78825 Id1, (xlv) D85429 H. sapiens gene for heat shock protein 40, complete cds, (xlii) U41766 Human metalloprotease/disintegrin/cysteine-rich protein precursor (MDC9) mRNA, (xlvii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, (xlviii) M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds,

(xlix) D15050 Human mRNA for transcription factor AREB6, complete cds, (l) U28386  
Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, (li)  
L77886 Human protein tyrosine phosphatase mRNA, complete cds, (lii) X64330 H.  
sapiens mRNA for ATP-citrate lyase, (liii) U37122 Human adducin gamma subunit mRNA,  
complete cds, (liv) X74008 H. sapiens mRNA for protein phosphatase 1 gamma, (lv)  
U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, (lvi) X76534 H.  
sapiens NMB mRNA, (lvii) D87071 Human mRNA for KIAA0233 gene, complete cds, (lviii)  
U90716 Human cell surface protein HCAR mRNA, complete cds, (lix) M91083 Human  
DNA-binding protein (HRC1) mRNA, complete cds, (lx) U29607 Human methionine  
aminopeptidase mRNA, complete cds, (lxii) M76482 Human 130-kD pemphigus vulgaris  
antigen mRNA, complete cds, (lxv) U72066 H. sapiens CtBP interacting protein CtIP  
(CtIP) mRNA, complete cds, (lxiii) K03195 Human (HepG2) glucose transporter gene  
mRNA, complete cds, (lxiv) X12953 Human rab2 mRNA, YPT1-related and member of ras  
family, (lxv) M60483 Human protein phosphatase 2A catalytic subunit-alpha gene,  
complete cds, (lxvi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (lxvii) D14520  
Human mRNA for GC-Box binding protein BTEB2, complete cds, (lxviii) L08069 Human  
heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (lxix) D50840 H.  
sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxx) L31801 H. sapiens  
monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (lxxi) S74017  
Nrf2=NF-E2-like basic leucine zipper transcriptional activator [human, hemin-in,  
(lxxii) X87241 H. sapiens mRNA for hFat protein, (lxxiii) X52425 Human IL-4-R mRNA  
for the interleukin 4 receptor, (lxxiv) D79994 Human mRNA for KIAA0172 gene, partial  
cds, (lxxv) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds,  
(lxxvi) M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds,  
(lxxvii) X78992 H. sapiens ERF-2 mRNA, (lxxviii) U42031 Human 54 kDa progesterone  
receptor-associated immunophilin FKBP54 mRNA, partial, (lxxix) U88629 Human RNA  
polymerase II elongation factor ELL2, complete cds, (lxxx) X52611 Human mRNA for  
transcription factor AP-2, (lxxxi) U28749 Human high-mobility group phosphoprotein  
isoform I-C (HMGIC) mRNA, complete cds, (lxxxii) L00058 Human (GH) germline c-myc  
proto-oncogene, exon 3 and 3' flank, (lxxxiii) L26336 Heat Shock Protein, 70 Kda  
(Gb:Y00371, (lxxxiv) L08246 Human myeloid cell differentiation protein (MCL1) mRNA,  
(lxxxv) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute  
promyelocytic, leukemia cells (lxxxvi) J0521 1 Desmoplakin, (lxxxvii) L00352 Human  
low density lipoprotein receptor gene, exon 18, (lxxxviii) Y13647 Stearyl-Coenzyme  
Desaturase, (lxxxix) X77794 H. sapiens mRNA for cyclin G1, (xc) M90656 Human  
gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (xcii) M13929 Human  
c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (xcii) D78129  
H. sapiens mRNA for squalene epoxidase, partial cds, (xciii) X80692 H. sapiens ERK3  
mRNA, and (xciv) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114; and (c) the  
protein expressed in the third response further comprises a protein that is encoded  
by a polynucleotide that is at least 90% identical to a nucleic acid molecule  
selected from the group consisting of: (i) M20030 Human small proline rich protein  
(sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2,  
(iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt.  
Splice, (v) L10343 Human elafin gene, complete cds, (vi) M63573 Human secreted  
cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small  
proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF  
(monocyte-derived neutrophil chemotactic factor), (ix) X57985 H. sapiens genes for  
histones H2B.1 and H2A, (x) L05188 H. sapiens small proline-rich protein 2 (SPRR2B)  
gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H. sapiens p27 mRNA, (xiii)  
L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914  
IEX-1-radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1,  
(xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds,  
(xvi) Z22548 H. sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918  
Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice,  
(xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for  
metallothionein from cadmium-treated cells, (xx) M80254 H. sapiens cyclophilin  
isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2)  
gene, complete cds, (xxii) Z14244 H. sapiens cox VIIb mRNA for cytochrome c oxidase  
subunit VIIb, (xxiii) X99920 H. sapiens mRNA for S100 calcium-binding protein A13,  
(xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat  
shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human  
GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human  
interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human  
heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 H.

sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxi) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxii) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxiii) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H. sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xlii) Z49254 H. sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splic, (xliv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv) AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlvi) X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlix) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (l) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H. sapiens EF-1delta gene encoding human elongation factor-1-delta, (lvii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lx) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19. (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds(carbox, (lxix) L42379 H. sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H. sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p16INK4/MTS1 mRNA, complete cds, (lxxv) X92896 H. sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genom, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxi) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxii) U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiii) X82693 H. sapiens mRNA for E48 antigen, (lxxxiv) M58026 Human NB-1 mRNA, complete cds, (lxxxv) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvi) X57579 H. sapiens activin beta-A subunit (exon 2), (lxxxvii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxviii) D89667 H. sapiens mRNA for c-myc binding protein, complete cds, (lxxxix) AB000584 H. sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci) J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H. sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H. sapiens PrP gene, exon 2, (xcviii) D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human creatine kinase-B mRNA, complete cds, (ci) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505 H. sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cvi) X67951 H. sapiens mRNA for proliferation-associated gene (pag), (cvii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 H.

sapiens MAPKAP kinase (3pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTF4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human

cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kDa subunit, (cxvii) X77794 H. sapiens mRNA for cyclin G1, (cxviii) M29064 Human hnRNP B1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H. sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 H. sapiens (clone s153) mRNA fragment, (cxxv) D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H. sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 H. sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxxx) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxii) L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxiii) X53586 Human mRNA for integrin alpha 6, (cxxxiii) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxiv) L11066 Human mRNA sequence, (cxxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxxvi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxxvii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxxviii) X91247 H. sapiens mRNA for thioredoxin reductase, (cxxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlv) Y08915 H. sapiens mRNA for alpha 4 protein, (cxlvii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H. sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cl) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue ( MRL3=mammalian ribosome L, (clv) X78992 H. sapiens ERF-2 mRNA, (clvi) L41351 H. sapiens prostasin mRNA, complete cds, (clvii) X75342 H. sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H. sapiens mRNA for desmoglein 2, (clxvi) L19267 H. sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 H. sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H. sapiens mRNA for TGIF protein, (clxxx) D85429 H. sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxiii) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (clxxxiii) X80695 H. sapiens OXA1Hs mRNA, (clxxxiv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxv) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvi) D31883 Human mRNA for KIAA0059 gene, complete cds, (clxxxvii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxviii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for

KIAA0210 gene, complete cds, (cxc) Z30643 H. sapiens mRNA for chloride channel (putative) 2139 bp, (cxcii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxciii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciv) X80692 H. sapiens ERK3 mRNA, (cxcv) X90858 H. sapiens mRNA for uridine phosphorylase, (cxcvi) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvii) X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcviii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcix) X52611 Human mRNA for transcription factor AP-2, (cxcx) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H. sapiens HBZ17 mRNA, (cciii) X76534 H. sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, (ccxiii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein.

50. The pharmaceutical composition of claim 47, wherein the protein expressed in the third response further comprises a protein that is encoded by a polynucleotide that is at least 90% identical to a nucleic acid molecule selected from the group consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Human elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H. sapiens genes for histones H2B.1 and H2A, (x) L05188 H. sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H. sapiens p27 mRNA, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H. sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H. sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H. sapiens mRNA for S100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxi) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxii) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxiii) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H. sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xli) S54005 thymosin beta-10 [human,

metastatic melanoma cell line, mRNA, 453 nt], (xlvi) Z49254 H. sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splic., (xliv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv) AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlvi) X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlix) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (1) X04654 Human mRNA for U1 RNA-associated 70K protein, (ii) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 RNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H. sapiens EF-1delta gene encoding human elongation factor-1-delta, (lvii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lxi) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19. (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds (carbox, (lxix) L42379 H. sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H. sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p16INK4/MTS1 mRNA, complete cds, (lxxv) X92896 H. sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genome, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxii) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxii) U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiii) X82693 H. sapiens mRNA for E48 antigen, (lxxxiv) M58026 Human NB-1 mRNA, complete cds, (lxxxv) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvi) X57579 H. sapiens activin beta-A subunit (exon 2), (lxxxvii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxviii) D89667 H. sapiens mRNA for c-myc binding protein, complete cds, (lxxxix) AB000584 H. sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xcii) J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H. sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H. sapiens PrP gene, exon 2, (xcviii) D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human creatine kinase-B mRNA, complete cds, (ci) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z229505 H. sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cvii) X67951 H. sapiens mRNA for proliferation-associated gene (pag), (cvii) J04611 Human lupus p70 (Ku) auto antigen protein mRNA, complete cds, (cviii) U09578 H. sapiens MAPKAP kinase (3pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTf4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe--S protein 8, 23 kDa subunit, (cxvii) X77794 H. sapiens mRNA for cyclin G1, (cxviii) M29064 Human hnRNP B1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx)

X78687 H. sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 H. sapiens (clone s153) mRNA fragment, (cxxv) D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H. sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 H. sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxxxx) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxi) L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxi) X53586 Human mRNA for integrin alpha 6, (cxxxi) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxiv) L11066 Human mRNA sequence, (cxxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxxvi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxxvii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxxviii) X91247 H. sapiens mRNA for thioredoxin reductase, (cxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxlii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlvii) Y08915 H. sapiens mRNA for alpha 4 protein, (cxlviii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H. sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cli) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue (MRL3=mammalian ribosome L, (clv) X78992 H. sapiens ERF-2 mRNA, (clvi) L41351 H. sapiens prostasin mRNA, complete eds, (clvii) X75342 H. sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H. sapiens mRNA for desmoglein 2, (clxvi) L19267 H. sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 H. sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H. sapiens mRNA for TGIF protein, (clxxx) D85429 H. sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxiii) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (clxxxiv) X80695 H. sapiens OXA1Hs mRNA, (clxxxv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxv) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvi) D31883 Human mRNA for KIAA0059 gene, complete cds, (clxxxvii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxviii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H. sapiens mRNA for chloride channel (putative) 2139 bp, (cxcii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxciii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciv) X80692 H. sapiens ERK3 mRNA, (cxciv) X90858 H. sapiens mRNA for uridine phosphorylase, (cxcv) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvi) X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcviii) X52611 Human mRNA for transcription factor AP-2, (cxcix) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H. sapiens HBZ17 mRNA, (cciii) X76534 H. sapiens NMB mRNA, (cciv)

U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, (ccxiii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X691 11 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein.

54. The method according to claim 53, wherein: (a) the first response further comprises a nucleic acid molecule that is at least 90% identical to a polynucleotide selected from the group consisting of: (i) M62831 Human transcription factor ETR101 mRNA, complete cds, (ii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (iii) L04731 H. sapiens translocation T(4:11) of ALL-1 gene to chromosome 4, (iv) X56681 Human junD mRNA, (v) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (vi) L38951 H. sapiens importin beta subunit mRNA, complete cds, (vii) D87071 Human mRNA for KIAA0233 gene, complete cds, (viii) M72885 Human GOS2 gene, 5' flank and cds, (ix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (x) S81914 IEX-1-radiation-inducible immediate-early gene [human, placenta, mRNA Partial, (xi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (xii) D86988 Human mRNA for KIAA0221 gene, complete cds, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) U62317 Chromosome 22q13 . BAC Clone CIT987SK-384D8 complete sequence, (xv) X04412 Human mRNA for plasma gelsolin, (xvi) L27706 Human chaperonin protein (Tcp20) gene complete cds, (xvii) X61123 Human BTG1 mRNA, (xviii) M60974 growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xix) L19437 Human transaldolase mRNA containing transposable element, complete cds, (xx) X57985 H. sapiens genes for histones H2B.1 and H2A, (xxi) D90086 Human pyruvate dehydrogenase (EC 1.2.4.1) beta subunit gene, exons 1-10, (xxii) M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, (xxiii) L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, (xxiv) D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450Hkv), complete cd, (xxv) U37122 Human adducin gamma subunit mRNA, complete cds, (xxvi) D45906 H. sapiens mRNA for LIMK-2, complete cds, (xxvii) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (xxviii) D87438 Human mRNA for KIAA0251 gene, partial cds, (xxix) L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, (xxx) D14043 Human mRNA for MGC-24, complete cds, (xxxi) D13988 Human rab GDI mRNA, complete cds, (xxxii) U28480 Uncoupling Protein Uc, (xxxiii) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (xxxiv) M55265 Human casein kinase II alpha subunit mRNA, complete cds, (xxxv) M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, (xxxvi) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox P, (xxxvii) D87442 Human mRNA for KIAA0253 gene, partial cds, (xxxviii) J03161 Human serum response factor (SRF) mRNA, complete cds, (xxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (xl) U17327 Human neuronal nitric oxide synthase (NOS1) mRNA, complete cds, (xli) D86966 Human mRNA for KIAA0211 gene, complete cds, (xlii) D85527 H. sapiens mRNA for LIM domain, partial cds, (xliii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (xliv) X59434 Human rohu mRNA for rhodanese, (xlv) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, and (xlvi) J05211 Desmoplakin; (b) the second response further comprises a nucleic acid molecule that is at least 90% identical to a polynucleotide selected from the group consisting of: (i) M57731 Human gro-beta mRNA, complete cds, (ii) S81914 IEX-1-radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (iii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (iv) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (v) M72885 Human GOS2 gene, 5' flank and cds, (vi) M62831 Human transcription factor ETR101 mRNA, complete cds, (vii)

M28130 Human interleukin 8 (IL8) gene, complete cds, (viii) X57985 H. sapiens genes for histones H2B.1 and H2A, (ix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (x) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xi) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xii) X56681 Human junD mRNA, (xiii) S75762 Oncogene Tls/Chop, Fusion Activate, (xiv) M84739 Human autoantigen calreticulin mRNA, complete cds, (xv) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (xvi) V00599 Tubulin, Bet, (xvii) X70326 Macmarck, (xviii) D10923 Human mRNA for HM74, (xix) D64142 Human mRNA for histone H1x, complete cds, (xx) D86974 Human mRNA for KIAA0220 gene, partial cds, (xxi) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xxii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (xxiii) L13391 Human helix-loop-helix basic phosphoprotein (GOS8) gene, complete cds, (xxiv) M31627 Human X box binding protein-1 (XBPA-1) mRNA, complete cds, (xxv) U40369 Human spermidine/spermine N1-acetyltransferase (SSAT) gene, complete cds, (xxvi) X52560 Nuclear Factor Nf-Il, (xxvii) X61123 Human BTG1 mRNA, (xxviii) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (xxix) U35048 Human TSC-22 protein mRNA, complete cds, (xxx) M69043 H. sapiens MAD-3 mRNA encoding IκB-like activity, complete cds, (xxxi) X51345 Human jun-B mRNA for JUN-B protein, (xxxii) S68616 Na<sup>+</sup>/H<sup>+</sup> exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], (xxxiii) X89750 H. sapiens mRNA for TGIF protein, (xxxiv) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein, (xxxv) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (xxxvi) X52541 Human mRNA for early growth response protein 1 (hEGR1), (xxxvii) D50683 H. sapiens mRNA for TGF-betaIIR alpha, complete cds, (xxxviii) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (xxxix) X91247 H. sapiens mRNA for thioredoxin reductase, (xl) U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, comp, (xli) L19314 Human HRY gene, complete cds, (xlii) M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), (xliii) U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, (xliv) S78825 Id1, (xlv) D85429 H. sapiens gene for heat shock protein 40, complete cds, (xlvi) U41766 Human metalloprotease/disintegrin/cysteine-rich protein precursor (MIC9) mRNA, (xlvii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, (xlviii) M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, (xlix) D15050 Human mRNA for transcription factor AREB6, complete cds, (li) U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, (li) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (lii) X64330 H. sapiens mRNA for ATP-citrate lyase, (liii) U37122 Human adducin gamma subunit mRNA, complete cds, (liv) X74008 H. sapiens mRNA for protein phosphatase 1 gamma, (lv) U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, (lvi) X76534 H. sapiens NMB mRNA, (lvii) D87071 Human mRNA for KIAA0233 gene, complete cds, (lviii) U90716 Human cell surface protein HCAR mRNA, complete cds, (lix) M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, (lx) U29607 Human methionine aminopeptidase mRNA, complete cds, (lxi) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (lxii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (lxiii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (lxiv) X12953 Human rab2 mRNA, YPT1-related and member of ras family, (lxv) M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, (lxvi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (lxvii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (lxviii) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (lxix) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (lxxi) S74017 Nrf2=NF-E2-like basic leucine zipper transcriptional activator [human, hernin-in, (lxxii) X87241 H. sapiens mRNA for hFat protein, (lxxiii) X52425 Human IL-4-R mRNA for the interleukin 4 receptor, (lxxiv) D79994 Human mRNA for KIAA0172 gene, partial cds, (lxxv) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (lxxvi) M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, (lxxvii) X78992 H. sapiens ERF-2 mRNA, (lxxviii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (lxxix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (lxxx) X52611 Human mRNA for transcription factor AP-2, (lxxxii) U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds, (lxxxiii) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (lxxxiv) L26336 Heat Shock Protein, 70 Kda (Gb:Y00371, (lxxxiv) L08246 Human myeloid cell differentiation protein (MCL1) mRNA, (lxxxv) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute

promyelocytic, leukemia cells (lxxxvi) J05211 Desmoplakin, (lxxxvii) L00352 Human low density lipoprotein receptor gene, exon 18, (lxxxviii) Y13647 Stearoyl-Coenzyme A Desaturase, (lxxxix) X77794 H. sapiens mRNA for cyclin G1, (xc) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (xci) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (xcii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (xciii) X80692 H. sapiens ERK3 mRNA, and (xciv) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114; and (c) the second response further comprises a nucleic acid molecule that is at least 90% identical to a polynucleotide selected from the group consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Human elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H. sapiens genes for histones H2B.1 and H2A, (x) L05188 H. sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H. sapiens p27 mRNA, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H. sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H. sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H. sapiens mRNA for S100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxi) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxii) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxiii) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H. sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xlii) Z49254 H. sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splice, (xliv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv) AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlvi) X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlix) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (l) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H. sapiens EF-1 delta gene encoding human elongation factor-1-delta, (lvii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lxi) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19. (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear

protein p120, partial cds(carbox, (lxix) L42379 H. sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H. sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human pl6INK4/MTS1 mRNA, complete cds, (lxxv) X92896 H. sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genomic, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxii) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxiii) U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiv) X82693 H. sapiens mRNA for E48 antigen, (lxxxv) M58026 Human NB-1 mRNA, complete cds, (lxxxvi) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvii) X57579 H. sapiens activin beta-A subunit (exon 2), (lxxxviii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxix) AB000584 H. sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci) J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H. sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H. sapiens PrP gene, exon 2, (xcviii) D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human creatine kinase-B mRNA, complete cds, (ci) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505 H. sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cvi) X67951 H. sapiens mRNA for proliferation-associated gene (pag), (cvii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 H. sapiens MAPKAP kinase (3'PK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTf4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe--S protein 8, 23 kDa subunit, (cxvii) X77794 H. sapiens mRNA for

cyclin G1, (cxviii) M29064 Human mRNP B1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H. sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 H. sapiens (clone s153) mRNA fragment, (cxxv) D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H. sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 H. sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxxxi) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxi) L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxi) X53586 Human mRNA for integrin alpha 6, (cxxxi) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxiv) L11066 Human mRNA sequence, (cxxxi) J04444 Human cytochrome c-1 gene, complete cds, (cxxvi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxvii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxviii) X91247 H. sapiens mRNA for thioredoxin reductase, (cxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlvii) Y08915 H. sapiens mRNA for alpha 4 protein, (cxlviii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717

H. sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cl) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue ( MRL3=mammalian ribosome L, (clv) X78992 H. sapiens ERF-2 mRNA, (clvi) L41351 H. sapiens prostasin mRNA, complete cds, (clvii) X75342 H. sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H. sapiens mRNA for desmoglein 2, (clxvi) L19267 H. sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 H. sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H. sapiens mRNA for TGIF protein, (clxxx) D85429 H. sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxiii) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (clxxxiv) X80695 H. sapiens OXA1Hs mRNA, (clxxxv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxvi) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvii) D31883 Human mRNA for KIAA0059 gene, complete cds, (clxxxviii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H. sapiens mRNA for chloride channel (putative) 2139bp, (cxcii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxciii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciv) X80692 H. sapiens ERK3 mRNA, (cxcv) X90858 H. sapiens mRNA for uridine phosphorylase, (cxcvi) M57763 Human ADP-ribosylation factor (HARF6) mRNA, complete cds, (cxcvii) X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcviii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcix) X52611 Human mRNA for transcription factor AP-2, (cxcx) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H. sapiens HBZ17 mRNA, (cciii) X76534 H. sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCFA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrrole 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, (ccxiii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein.

56. The method according to claim 55, wherein: (a) the first response further comprises a protein that is encoded by a polynucleotide that is at least 90% identical to a nucleic acid molecule selected from the group consisting of: (i)

M62831 Human transcription factor ETR101 mRNA, complete cds, (ii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (iii) L04731 H. sapiens translocation T(4:11) of ALL-1 gene to chromosome 4, (iv) X56681 Human junD mRNA, (v) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (vi) L38951 H. sapiens importin beta subunit mRNA, complete cds, (vii) D87071 Human mRNA for KIAA0233 gene, complete cds, (viii) M72885 Human GOS2 gene, 5' flank and cds, (ix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (x) S81914 IEX-1-radiation-inducible immediate-early gene [human, placenta, mRNA Partial, (xi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (xii) D86988 Human mRNA for KIAA0221 gene, complete cds, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) U62317 Chromosome 22q13 BAC Clone CIT987SK-384D8 complete sequence, (xv) X04412 Human mRNA for plasma gelsolin, (xvi) L27706 Human chaperonin protein (Tcp20) gene complete cds, (xvii) X61123 Human BTG1 mRNA, (xviii) M60974 growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xix) L19437 Human transaldolase mRNA containing transposable element, complete cds, (xx) X57985 H. sapiens genes for histones H2B.1 and H2A, (xxi) D90086 Human pyruvate dehydrogenase (EC 1.2.4.1) beta subunit gene, exons 1-10, (xxii) M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, (xxiii) L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, (xxiv) D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450Hkv), complete cd, (xxv) U37122 Human adducin gamma subunit mRNA, complete cds, (xxvi) D45906 H. sapiens mRNA for LIMK-2, complete cds, (xxvii) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (xxviii) D87438 Human mRNA for KIAA0251 gene, partial cds, (xxix) L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, (xxx) D14043 Human mRNA for MGC-24, complete cds, (xxxi) D13988 Human rab GDI mRNA, complete cds, (xxxii) U28480 Uncoupling Protein Uc, (xxxiii) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (xxxiv) M55265 Human casein kinase II alpha subunit mRNA, complete cds, (xxxv) M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, (xxxvi) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox P, (xxxvii) D87442 Human mRNA for KIAA0253 gene, partial cds, (xxxviii) J03161 Human serum response factor (SRF) mRNA, complete cds, (xxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (xl) U17327 Human neuronal nitric oxide synthase (NOS 1) mRNA, complete cds, (xli) D86966 Human mRNA for KIAA0211 gene, complete cds, (xlii) D85527 H. sapiens mRNA for LIM domain, partial cds, (xliii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (xliv) X59434 Human rohu mRNA for rhodanese, (xlv) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, and (xlvi) J05211 Desmoplakin; (b) the second response further comprises a protein that is encoded by a polynucleotide that is at least 90% identical to a nucleic acid molecule selected from the group consisting of: (i) M57731 Human gro-beta mRNA, complete cds, (ii) S81914 IEX-1-radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (iii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (iv) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (v) M72885 Human GOS2 gene, 5' flank and cds, (vi) M62831 Human transcription factor ETR101 mRNA, complete cds, (vii) M28130 Human interleukin 8 (IL8) gene, complete cds, (viii) X57985 H. sapiens genes for histones H2B.1 and H2A, (ix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (x) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xi) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xii) X56681 Human junD mRNA, (xiii) S75762 Oncogene Tls/Chop, Fusion Activate, (xiv) M84739 Human autoantigen calreticulin mRNA, complete cds, (xv) M21302 Human small proline rich protein (sprlII) mRNA, clone 174N, (xvi) V00599 Tubulin, Bet, (xvii) X70326 Macmarck, (xviii) D10923 Human mRNA for HM74, (xix) D64142 Human mRNA for histone H1x, complete cds, (xx) D86974 Human mRNA for KIAA0220 gene, partial cds, (xxi) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xxii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (xxiii) L13391 Human helix-loop-helix basic phosphoprotein (GOS8) gene, complete cds, (xxiv) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (xxv) U40369 Human spermidine/spermine N1-acetyltransferase (SSAT) gene, complete cds, (xxvi) X52560 Nuclear Factor Nf-Il, (xxvii) X61123 Human BTG1 mRNA, (xxviii) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (xxix) U35048 Human TSC-22 protein mRNA, complete cds, (xxx) M69043 H. sapiens MAD-3 mRNA encoding IkB-like activity, complete cds, (xxxi) X51345 Human jun-B mRNA for JUN-B protein, (xxxii) S68616 Na+/H+ exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], (xxxiii) X89750 H. sapiens mRNA for TGIF protein, (xxxiv) X69111 H. sapiens HLH 1R21

mRNA for helix-loop-helix protein, (xxxv) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (xxxvi) X52541 Human mRNA for early growth response protein 1 (hEGR1), (xxxvii) D50683 H. sapiens mRNA for TGF-betaIIIR alpha, complete cds, (xxxviii) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (xxxix) X91247 H. sapiens mRNA for thioredoxin reductase, (x1) U05875 Human clone pSK1 interferon gamma receptor accessory factor-1(AF-1) mRNA, comp, (xli) L19314 Human HRY gene, complete cds, (xlii) M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), (xliii) U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, (xliv) S78825 Id1, (xlv) D85429 H. sapiens gene for heat shock protein 40, complete cds, (xlvi) U41766 Human metalloprotease/disintegrin/cysteine-rich protein precursor (MDC9) mRNA, (xlvii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, (xlviii) M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, (xlix) D15050 Human mRNA for transcription factor AREB6, complete cds, (li) U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, (lii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (lii) X64330 H. sapiens mRNA for ATP-citrate lyase, (liii) U37122 Human adducin gamma subunit mRNA, complete cds, (liv) X74008 H. sapiens mRNA for protein phosphatase 1 gamma, (lv) U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, (lvi) X76534 H. sapiens NMB mRNA, (lvii) D87071 Human mRNA for KIAA0233 gene, complete cds, (lviii) U90716 Human cell surface protein HCAR mRNA, complete cds, (lix) M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, (lx) U29607 Human methionine aminopeptidase mRNA, complete cds, (lxi) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (lxii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (lxiii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (lxiv) X12953 Human rab2 mRNA, YPT1-related and member of ras family, (lxv) M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, (lxvi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (lxvii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (lxviii) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (lxix) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (lxxi) S74017 Nrf2=NF-E2-like basic leucine zipper transcriptional activator [human, hemin-in, (lxxii) X87241 H. sapiens mRNA for hFat protein, (lxxiii) X52425 Human IL-4-R mRNA for the interleukin 4 receptor, (lxxiv) D79994 Human mRNA for KIAA0172 gene, partial cds, (lxxv) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (lxxvi) M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, (lxxvii) X78992 H. sapiens ERF-2 mRNA, (lxxviii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (lxxix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (lxxx) X52611 Human mRNA for transcription factor AP-2, (lxxxi) U28749 Human high-mobility group phosphoprotein isoform I--C (HMIGIC) mRNA, complete cds, (lxxxii) L00058 Human (GH) gerrline c-myc proto-oncogene, exon 3 and 3' flank, (lxxxiii) L26336 Heat Shock Protein, 70 Kda (Gb:Y00371, (lxxxiv) L08246 Human myeloid cell differentiation protein (MCL1) mRNA, (lxxxv) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic,leukemia cells (lxxxvi) J05211 Desmoplakin, (lxxxvii) L00352 Human low density lipoprotein receptor gene, exon 18, (lxxxviii) Y13647 Stearyl-Coenzyme Desaturase, (lxxxix) X77794 H. sapiens mRNA for cyclin G1, (xc) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (xcii) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (xcii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (xciii) X80692 H. sapiens ERK3 mRNA, and (xciv) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114; and (c) the third response further comprises a protein that is encoded by a polynucleotide that is at least 90% identical to a nucleic acid molecule selected from the group consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Human elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H. sapiens genes for histones H2B.1 and H2A, (x) L05188 H. sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H. sapiens p27 mRNA, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1-radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome

activator hPA28 subunit beta, complete cds, (xvi) Z22548 H. sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H. sapiens cyclophilin isoform (hCyP3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H. sapiens mRNA for S100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxi) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxii) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxiii) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H. sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xlii) Z49254 H. sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splic, (xliv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv) AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlvi) X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlix) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (1) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H. sapiens EF-1delta gene encoding human elongation factor-1-delta, (lvii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lxi) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19. (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds(carbox, (lxix) L42379 H. sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H. sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p1 6INK4/MTS 1 mRNA, complete cds, (lxxv) X92896 H. sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genom, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxi) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxii) U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiii) X82693 H. sapiens mRNA for E48 antigen, (lxxxiv) M58026 Human NB-1 mRNA, complete cds, (lxxxv) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvi) X57579 H. sapiens activin beta-A subunit (exon 2), (lxxxvii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxviii) D89667 H. sapiens mRNA for c-myc binding protein, complete cds, (lxxxix) AB000584 H. sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci) J04794 Human aldehyde reductase mRNA,

complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H. sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H. sapiens PrP gene, exon 2, (xcviii) D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human creatine kinase-B mRNA, complete cds, (ci) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505 H. sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cvi) X67951 H. sapiens mRNA for proliferation-associated gene (pag), (cvii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 H. sapiens MAPKAP kinase (3 pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTF4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579

Human mitochondrial NADH dehydrogenase-ubiquinone Fe--S protein 8, 23 kDa subunit, (cxvii) X77794 H. sapiens mRNA for cyclin G1, (cxviii) M29064 Human hnRNP B1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H. sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 H. sapiens (clone s153) mRNA fragment, (cxxv) D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H. sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 H. sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxx) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxi) L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxii) X53586 Human mRNA for integrin alpha 6, (cxxxiii) D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxiv) L11066 Human mRNA sequence, (cxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxvi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxvii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxviii) X91247 H. sapiens mRNA for thioredoxin reductase, (cxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlvi) Y08915 H. sapiens mRNA for alpha 4 protein, (cxlvii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H. sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cli) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue ( MRL3=mammalian ribosome L, (clv) X78992 H. sapiens ERF-2 mRNA, (clvi) L41351 H. sapiens prostasin mRNA, complete cds, (clvii) X75342 H. sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H. sapiens mRNA for desmoglein 2, (clxvi) L19267 H. sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 H. sapiens

GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H. sapiens mRNA for TGIF protein, (clxxx) D85429 H. sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxii) M31627 Human X box binding protein-1 (XBPA-1) mRNA, complete cds, (clxxxiii) X80695 H. sapiens OXA1Hs mRNA, (clxxxiv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxv) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvi) D31883 Human mRNA for KIAA0059 gene, complete cds, (clxxxvii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxviii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H. sapiens mRNA for chloride channel (putative) 2139bp, (cxci) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxcii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciii) X80692 H. sapiens ERK3 mRNA, (cxciv) X90858 H. sapiens mRNA for uridine phosphorylase, (cxcv) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvi) X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcviii) X52611 Human mRNA for transcription factor AP-2, (cxcix) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase STThM (sthM) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H. sapiens HBZ17 mRNA, (cciii) X76534 H. sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, (ccxiii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein.

64. The method according to claim 57, wherein: (a) the first response comprises at least one nucleic acid molecule that is at least 90% identical to a polynucleotide selected from the group consisting of: (i) M62831 Human transcription factor ETR101 mRNA, complete cds, (ii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (iii) L04731 H. sapiens translocation T(4;11) of ALL-1 gene to chromosome 4, (iv) X56681 Human junD mRNA, (v) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (vi) L38951 H. sapiens importin beta subunit mRNA, complete cds, (vii) D87071 Human mRNA for KIAA0233 gene, complete cds, (viii) M72885 Human GOS2 gene, 5' flank and cds, (ix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (x) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, (xi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (xii) D86988 Human mRNA for KIAA0221 gene, complete cds, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) U62317 Chromosome 22q13 BAC Clone CIT987SK-384D8 complete sequence, (xv) X04412 Human mRNA for plasma gelsolin, (xvi) L27706 Human chaperonin protein (Tcp20) gene complete cds, (xvii) X61123 Human BTG1 mRNA, (xviii) M60974 growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xix) L19437 Human transaldolase mRNA containing transposable element, complete cds, (xx) X57985 H. sapiens genes for histones H2B.1 and H2A, (xxi) D90086 Human pyruvate dehydrogenase (EC 1.2.4.1) beta subunit gene, exons 1-10, (xxii) M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, (xxiii) L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, (xxiv) D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450Hkv), complete cd, (xxv) U37122 Human adducin gamma subunit mRNA,

complete cds, (xxvi) D45906 H. sapiens mRNA for LIMK-2, complete cds, (xxvii) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (xxviii) D87438 Human mRNA for KIAA0251 gene, partial cds, (xxix) L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, (xxx) D14043 Human mRNA for MGC-24, complete cds, (xxxii) D13988 Human rab GDI mRNA, complete cds, (xxxiii) U28480 Uncoupling Protein Uc, (xxxiii) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (xxxiv) M55265 Human casein kinase II alpha subunit mRNA, complete cds, (xxxv) M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, (xxxvi) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox P, (xxxvii) D87442 Human mRNA for KIAA0253 gene, partial cds, (xxxviii) J03161 Human serum response factor (SRF) mRNA, complete cds, (xxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (xl) U17327 Human neuronal nitric oxide synthase (NOS 1) mRNA, complete cds, (xli) D86966 Human mRNA for KIAA0211 gene, complete cds, (xlii) D85527 H. sapiens mRNA for LIM domain, partial cds, (xliii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (xliv) X59434 Human rohu mRNA for rhodanese, (xlv) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, and (xlvi) J05211 Desmoplakin; (b) the second response comprises at least one nucleic acid molecule that is at least 90% identical to a polynucleotide selected from the group consisting of; and (i) M57731 Human gro-beta mRNA, complete cds, (ii) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (iii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (iv) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (v) M72885 Human GOS2 gene, 5' flank and cds, (vi) M62831 Human transcription factor ETR101 mRNA, complete cds, (vii) M28130 Human interleukin 8 (IL8) gene, complete cds, (viii) X57985 H. sapiens genes for histones H2B.1 and H2A, (ix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (x) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xi) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xii) X56681 Human jund mRNA, (xiii) S75762 Oncogene Tls/Chop, Fusion Activate, (xiv) M84739 Human autoantigen calreticulin mRNA, complete cds, (xv) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (xvi) V00599 Tubulin, Bet, (xvii) X70326 Macmarck, (xviii) D10923 Human mRNA for HM74, (xix) D64142 Human mRNA for histone H1x, complete cds, (xx) D86974 Human mRNA for KIAA0220 gene, partial cds, (xxi) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xxii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (xxiii) L13391 Human helix-loop-helix basic phosphoprotein (GOS8) gene, complete cds, (xxiv) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (xxv) U40369 Human spermidine/spermine N1-acetyltransferase (SSAT) gene, complete cds, (xxvi) X52560 Nuclear Factor Nf-Il, (xxvii) X61123 Human BTG1 mRNA, (xxviii) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (xxix) U35048 Human TSC-22 protein mRNA, complete cds, (xxx) M69043 H. sapiens MAD-3 mRNA encoding IKB-like activity, complete cds, (xxxii) X51345 Human jun-B mRNA for JUN-B protein, (xxxii) S68616 Na+/H+exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], (xxxiii) X89750 H. sapiens mRNA for TGIF protein, (xxxiv) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein, (xxxv) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (xxxvi) X52541 Human mRNA for early growth response protein 1 (hEGR1), (xxxvii) D50683 H. sapiens mRNA for TGF-betaIIIR alpha, complete cds, (xxxviii) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (xxxix) X91247 H. sapiens mRNA for thioredoxin reductase, (xl) U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, comp, (xli) L19314 Human HRY gene, complete cds, (xlii) M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), (xliii) U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, (xliv) S78825 Id1, (xlv) D85429 H. sapiens gene for heat shock protein 40, complete cds, (xlvi) U41766 Human metalloprotease/disintegrin/cysteine-rich protein precursor (MDC9) mRNA, (xlvii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, (xlviii) M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, (xlix) D15050 Human mRNA for transcription factor AREB6, complete cds, (li) U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, (lii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (lii) X64330 H. sapiens mRNA for ATP-citrate lyase, (liii) U37122 Human adducin gamma subunit mRNA, complete cds, (liv) X74008 H. sapiens mRNA for protein phosphatase 1 gamma, (lv) U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, (lvi) X76534 H. sapiens NMB mRNA, (lvii) D87071 Human mRNA for KIAA0233 gene, complete cds, (lviii) U90716 Human cell surface protein HCAR mRNA, complete cds, (lix) M91083 Human

DNA-binding protein (HRC1) mRNA, complete cds, (lx) U29607 Human methionine aminopeptidase mRNA, complete cds, (lxi) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (lxii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (lxiii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (lxiv) X12953 Human rab2 mRNA, YPT1-related and member of ras family, (lxv) M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, (lxvi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (lxvii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (lxviii) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (lxix) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (lxxi) S74017 Nrf2=NF-E2-like basic leucine zipper transcriptional activator [human, hemin-in, (lxxii) X87241 H. sapiens mRNA for hFat protein, (lxxiii) X52425 Human IL-4-R mRNA for the interleukin 4 receptor, (lxxiv) D79994 Human mRNA for KIAA0172 gene, partial cds, (lxxv) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (lxxvi) M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, (lxxvii) X78992 H. sapiens ERF-2 mRNA, (lxxviii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (lxxix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (lxxx) X52611 Human mRNA for transcription factor AP-2, (lxxxi) U28749 Human high-mobility group phosphoprotein isoform I--C (HMGIC) mRNA, complete cds, (lxxxii) L00058 Human (GH) gerrnline c-myc proto-oncogene, exon 3 and 3' flank, (lxxxiii) L26336 Heat Shock Protein, 70 Kda (Gb:Y00371, (lxxxiv) L08246 Human myeloid cell differentiation protein (MCL1) mRNA, (lxxxv) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic,leukemia cells (lxxxvi) J05211 Desmoplakin, (lxxxvii) L00352 Human low density lipoprotein receptor gene, exon 18, (lxxxviii) Y13647 Stearyl-Coenzyme Desaturase, (lxxxix) X77794 H. sapiens mRNA for cyclin G1, (xc) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (xci) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (xcii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (xciii) X80692 H. sapiens ERK3 mRNA, and (xciv) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114; and (c) the third response comprises at least one nucleic acid molecule that is at least 90% identical to a polynucleotide selected from the group consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Huma elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H. sapiens genes for histones H2B.1 and H2A, (x) L05188 H. sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H. sapiens p27 mRNA, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H. sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H. sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H. sapiens mRNA for S100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxi) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxii) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxiii) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H. sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20

mRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xlii) Z49254 H. sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splic, (xliv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv) AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlvi) X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlix) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (l) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H. sapiens EF-1delta gene encoding human elongation factor-1-delta, (lvii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lxi) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19. (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds (carbox, (lxix) L42379 H. sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H. sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p16INK4/MTS1 mRNA, complete cds, (lxxv) X92896 H. sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genome, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxii) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxiii) U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiv) X82693 H. sapiens mRNA for E48 antigen, (lxxxv) M58026 Human NB-1 mRNA, complete cds, (lxxxv) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvi) X57579 H. sapiens activin beta-A subunit (exon 2), (lxxxvii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxviii) AB000584 H. sapiens mRNA for c-myc binding protein, complete cds, (lxxxix) AB000584 H. sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci) J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H. sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H. sapiens PrP gene, exon 2, (xcviii) D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human creatine kinase-B mRNA, complete cds, (ci) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505 H. sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cvi) X67951 H. sapiens mRNA for proliferation-associated gene (pag), (cvii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 H. sapiens MAPKAP kinase (3 pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTf4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe--S protein 8, 23 kDa subunit, (cxvii) X77794 H. sapiens mRNA for cyclin G1, (cxviii) M29064

Human hnRNP B1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H. sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 H. sapiens (clone s153) mRNA fragment, (cxxv) D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H. sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 H. sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxxx) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxii) LA8546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxiii) X53586 Human mRNA for integrin alpha 6, (cxxxiii) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxiv) L11066 Human mRNA sequence, (cxxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxxvi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxxvii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxxviii) X91247 H. sapiens mRNA for thioredoxin reductase, (cxxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxlii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlvii) Y08915 H. sapiens mRNA for alpha 4 protein, (cxlviii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H. sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cli) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue (MRL3=mammalian ribosome L, (clv) X78992 H. sapiens ERF-2 mRNA, (clvi) LA1351 H. sapiens prostasin mRNA, complete cds, (clvii) X75342 H. sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H. sapiens mRNA for desmoglein 2, (clxvi) L19267 H. sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 H. sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H. sapiens mRNA for TGIF protein, (clxxx) D85429 H. sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxii) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (clxxxiii) X80695 H. sapiens OXA1Hs mRNA, (clxxxiv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxv) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvi) D31883 Human mRNA for KIAA0059 gene, complete cds, (clxxxvii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxviii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H. sapiens mRNA for chloride channel (putative) 2139bp, (cxcii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxcii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxcii) X80692 H. sapiens ERK3 mRNA, (cxciv) X90858 H. sapiens mRNA for uridine phosphorylase, (cxcv) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvi) X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcviii) X52611 Human mRNA for transcription factor AP-2, (cxcix) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase SThM

(sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H. sapiens HBZ17 mRNA, (cciii) X76534 H. sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACLI) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein.

75. The method according to claim 25, wherein the compound inhibits at least one nucleic acid molecule repressed in the first response, the second response, or the third response that is at least 90% identical to a polynucleotide selected from the group consisting of: (i) D50840 Homo sapiens mRNA for ceramide glucosyltransferase, complete cds, (ii) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (iii) X77794 H.sapiens mRNA for cyclin G1, (iv) D89052 Homo sapiens mRNA for proton-ATPase-like protein, complete cds, (v) L26336 Heat Shock Protein, 70 Kda (Gb:Y00371), (vi) M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), (vii) L16862 Homo sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, (viii) M92843 H.sapiens zinc finger transcriptional regulator mRNA, complete cds, (ix) U72649 Human BTG2 (BTG2) mRNA, complete cds, (x) X74104 H.sapiens mRNA for TRAP beta subunit, (xi) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (xii) D15050 Human mRNA for transcription factor AREB6, complete cds, (xiii) U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, (xiv) U41766 Human metalloprotease/disinte- grin/cysteine-rich protein precursor (MDC9) mRNA, c, (xv) AF006041 Homo sapiens Fas-binding protein (DAXX) mRNA, partial cds, (xvi) U28749 Human high-mobility group phosphoprotein isoform I--C (HMGIC) mRNA, complete cds, (xvii) M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, (xviii) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (xix) X52425 Human IL-4-R mRNA for the interleukin 4 receptor, (xx) X94563 H.sapiens dbi/acbp gene exon 1 & 2 (xxi) L11066 Human mRNA sequence, (xxii) X74008 H.sapiens mRNA for protein phosphatase 1 gamma, (xxiii) X87241 H.sapiens mRNA for hFat protein, (xxiv) S68616 Na+/H+ exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], (xxv) D13705 Human mRNA for fatty acids KIAA0211 gene, complete cds, (xxvi) D86966 Human mRNA for omega-hydroxylase (cytochrome P-450OHKV), complete cds, (xxvii) U17327 Human neuronal nitric oxide synthase mRNA, complete cds, (xxviii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, (xxix) D85527 Homo sapiens mRNA for LIM domain, partial cds, (xxx) L07517 Mucin 6, Gastric (Gb:L07517), (xxxi) X64330 H.sapiens mRNA for ATP-citrate lyase, (xxxii) X89267 H.sapiens DNA for thioredoxin uroporphyrinogen decarboxylase gene, (xxxiii) X91247 H.sapiens mRNA for Kruppel related zinc finger protein (HTF10) mRNA, reductase, (xxxiv) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (xxxv) X78992 H.sapiens ERF-2 mRNA, (xxxvi) L19314 Human HRY gene, complete cds, (xxxvii) X12794 Human v-erbA related ear-2 gene, (xxxviii) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (xxxix) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds. (xl) M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, (xli) L08246 Human myeloid cell differentiation protein (MCL1) mRNA, (xlii) L37042 Homo sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, (xliii) D87071 Human mRNA for KIAA0233 gene, complete cds, (xliv) S74017 Nrf2-NF-E2-like basic leucine zipper transcriptional activator [human, hemin-ind, (xlv) LA1351 Homo sapiens prostasin mRNA, complete cds, (xlvi) L00352 Human low density lipoprotein receptor gene, exon 18, (xlvii) D50683 Homo sapiens mRNA for TGF-betaIIR alpha, complete cds, (xlviii) X89750 H.sapiens mRNA for TGIF protein, (xlix) t D13988 Human rab GDI mRNA, complete cds, (li) M12886 Human T-cell receptor active beta-chain mRNA, complete cds,

M55265 Human casein kinase II alpha subunit mRNA, complete cds, (lii) J03161 Human serum response factor (SRF) mRNA, complete cds, (liii) M58286 Homo sapiens tumor necrosis factor receptor mRNA, complete cds, (liv) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (lv) U90716 Human cell surface protein HCAR mRNA, complete cds, (lvi) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4 (751), (lvii) U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, compl, (lviii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (lix) D87442 Human mRNA for KIAA0253 gene, partial cds, (lx) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (lxi) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (lxii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (lxiii) U88898 Human endogenous retroviral H protease/integrase-derived ORF1 mRNA, complete cds, (lxiv) M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, (lxv) Z30643 H.sapiens mRNA for chloride channel (putative) 2139bp, (lxvi) X12953 Human rab2 mRNA, YPT1-related and member of ras family, (lxvii) D78129 Homo sapiens mRNA for squalene epoxidase, partial cds, (lxviii) S78825 Id1, (lxix) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (lxx) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue ( MRL3=mammalian ribosome L, (lxxi) D14043 Human mRNA for MGC-24, complete cds, (lxxii) U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, (lxxiii) M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, (lxxiv) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (lxxv) U66616 Human SWI/SNF complex 170 KDa subunit (BAF170) mRNA, complete cds, (lxxvi) U29607 Human methionine aminopeptidase mRNA, complete cds, (lxxvii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (lxxviii) D14874 Homo sapiens mRNA for adrenomedullin precursor, complete cds, (lxxix) D85429 Homo sapiens gene for heat shock protein 40, complete cds, (lxxx) t M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, (lxxxi) U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, (lxxxii) X75342 H.sapiens SHB mRNA, (lxxxiii) t D45906 Homo sapiens mRNA for LIMK-2, complete cds, (lxxxiv) X59434 Human rohu mRNA for rhodanese, (lxxxv) M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, (lxxxvi) D79994 Human mRNA for KIAA0172 gene, partial cds, (lxxxvii) D86965 Human mRNA for KIAA0210 gene, complete cds, (lxxxviii) Y13647 Stearoyl-Coenzyme Desaturase, (lxxxix) X52541 Human mRNA for early growth response protein 1 (hEGR1), (xc) Z26317 H.sapiens mRNA for desmoglein 2, (xcii) t M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (xcii) L38490 Homo sapiens ADP-ribosylation factor mRNA, complete cds, (xciii) D87438 Human mRNA for KIAA0251 gene, partial cds, (xciv) M31627 Human X box binding protein-1 (XPB-1) mRNA, complete cds, (xcv) X80692 H.sapiens ERK3 mRNA, (xcvi) U37122 Human adducin gamma subunit mRNA, complete cds, (xcvii) M83667 Human NF-IL6-beta protein mRNA, complete cds, (xcviii) J05211 Desmoplakin I, (xcix) D42123 Homo sapiens mRNA for ESP1/CRP2, complete cds, (c) X90858 H.sapiens mRNA for uridine phosphorylase, (ci) X76717 H.sapiens MT-11 mRNA, (cii) Y08915 H.sapiens mRNA for alpha 4 protein, (ciii) U30999 Human (memc) mRNA, 3'UTR, (civ) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (cv) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (cvii) U28480 Uncoupling Protein Ucp, (cviii) X53586 Human mRNA for integrin alpha 6, (cvii) M64347 Human novel growth factor receptor mRNA, 3' cds, (cix) U52100 Human XMP mRNA, complete cds, (cx) D21852 Human mRNA for KIAA0029 gene, partial cds, (cxi) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cxii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxiii) L40391 Homo sapiens (clone s153) mRNA fragment, (cxiv) D87469 Human mRNA for KIAA0279 gene, partial cds, (cxv) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (cxvi) L19267 Homo sapiens 59 protein mRNA, 3' end, (cxvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxviii) X52611 Human mRNA for transcription factor AP-2, (cxix) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (cxx) L31801 Homo sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (cxxi) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (cxxii) L48546 Homo sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxiii) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (cxxiv) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cxxv) L37127 Homo sapiens RNA polymerase II mRNA, complete cds, (cxxvi) U52426 Homo sapiens GOK (STIM1) mRNA, complete cds, (cxxvii) U72066 Homo sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (cxxviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (cxxix) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (cxxxi) D90209 Human mRNA for DNA binding protein TAXREB67, (cxxxi)

D83777 Human mRNA for KIAA0193 gene, complete cds, (cxxxii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (cxxxiii) M80244 Human E16 mRNA, complete cds, (cxxxiv) D31883 Human mRNA for KIAA0059 gene, complete cds, (cxxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxxvi) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (cxxxvii) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxxviii) U00968 Human SREBP-1 mRNA, complete cds, (cxxxix) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (cxl) X92720 H.sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxli) X77366 H.sapiens HBZ17 mRNA, (cxlii) U53347 Human neutral amino acid transporter B mRNA, complete cds, (cxliii) X80695 H.sapiens OXA1Hs mRNA, (cxliv) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, (cxlv) S75762 Oncogene Tls/Chop, Fusion Activated, (cxlvi) U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, (cxlvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (cxlviii) X76534 H.sapiens NMB mRNA, (cxlix) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (cli) M27396 Human asparagine synthetase mRNA, complete cds, (cli) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (clii) X69111 H.sapiens HLH 1R21 mRNA for helix-loop-helix protein, (cliii) M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, (cliv) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (clv) X01630 Human mRNA for argininosuccinate synthetase.

79. The pharmaceutical composition of claim 76, wherein the third response comprises at least one nucleic acid molecules at least 90% identical to the polynucleotides of the group consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Human elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H.sapiens genes for histones H2B.1 and H2A, (x) L05188 Homo sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H.sapiens p27 mRNA, (xiii) L19779 Homo sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1-radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) 1D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H.sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H.sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H.sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H.sapiens mRNA for S100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 Homo sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxi) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxii) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxiii) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H.sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xlii) Z49254 H.sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splice, (xliv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv) AF006084 Homo sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlvi) X62083 H.sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlii) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (l) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic

fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H.sapiens EF-1delta gene encoding human elongation factor-1-delta, (lvii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H.sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lxi) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19. (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 Homo sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) DI 3413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds(carbox, (lxix) L42379 Homo sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H.sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p1 6INK4/MTS 1 mRNA, complete cds, (lxxv) X92896 H.sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H.sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 Homo sapiens excision and cross link repair protein (ERCC4) gene, complete genome, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxi) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxii) U53830 Homo sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiii) X82693 H.sapiens mRNA for E48 antigen, (lxxxiv) M58026 Human NB-1 mRNA, complete cds, (lxxxv) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvi) X57579 H.sapiens activin beta-A subunit (exon 2), (lxxxvii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxviii) D89667 Homo sapiens mRNA for c-myc binding protein, complete cds, (lxxxix) AB000584 Homo sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci) J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H.sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H.sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H.sapiens PrP gene, exon 2, (xcviii) D89052 Homo sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human creatine kinase-B mRNA, complete cds, (ci) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505 H.sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cvi) X67951 H.sapiens mRNA for proliferation-associated gene (pag), (cvii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 Homo sapiens MAPKAP kinase (3 pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTf4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kDa subunit, (cxvii) X77794 H.sapiens mRNA for cyclin G1, (cxviii) M29064 Human hnRNP B1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H.sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 Homo sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 Homo sapiens (clone s153) mRNA fragment, (cxxv) D42123 Homo sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H.sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 Homo sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H.sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxx) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxi) L48546 Homo sapiens

tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxii) X53586 Human mRNA for integrin alpha 6, (cxxxiii) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxiv) L11066 Human mRNA sequence, (cxxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxxvi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxxvii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxxviii) X91247 H.sapiens mRNA for thioredoxin reductase, (cxxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlvii) Y08915 H. sapiens mRNA for alpha 4 protein, cxlviii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H.sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cli) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue (MRL3 =mammalian ribosome L, (clv) X78992 H.sapiens ERF-2 mRNA, (clvi) L41351 Homo sapiens prostasin mRNA, complete cds, (clvii) X75342 H.sapiens SHB mRNA, P1 (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 Homo sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 Homo sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 Homo sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H.sapiens mRNA for desmoglein 2, (clxvi) L19267 Homo sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 Homo sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 Homo sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490. Homo sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H.sapiens mRNA for TGIF protein, (clxxx) D85429 Homo sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxiii) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (clxxxiv) X80695 H.sapiens OXA1Hs mRNA, (clxxxiv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxv) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvi) D31883 Human mRNA for KIAA0059 gene, complete cds, (clxxxvii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxviii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H.sapiens mRNA for chloride channel (putative) 2139bp, (cxcii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxciii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciv) X80692 H.sapiens ERK3 mRNA, (cxcv) X90858 H.sapiens mRNA for uridine phosphorylase, (cxcv) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvi) X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcviii) X52611 Human mRNA for transcription factor AP-2, (cxcix) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H.sapiens HBZ17 mRNA, (cciii) X76534 H.sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCAP78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene

Tls/Chop, Fusion Activated, (ccxiii) U72066 Homo sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X69111 H.sapiens HLH 1R21 mRNA for helix-loop-helix protein.

89. The screening method of claim 82, wherein: (a) the first response comprises the altered pattern of expression of at least one protein that is at least 90% identical to a polypeptide encoded by a polynucleotide selected from the group consisting of: (i) M62831 Human transcription factor ETR101 mRNA, complete cds, (ii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (iii) L04731 H. sapiens translocation T(4:11) of ALL-1 gene to chromosome 4, (iv) X56681 Human junD mRNA, (v) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (vi) L38951 H. sapiens importin beta subunit mRNA, complete cds, (vii) D87071 Human mRNA for KIAA0233 gene, complete cds, (viii) M72885 Human GOS2 gene, 5' flank and cds, (ix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (x) S81914 IEX-1-radiation-inducible immediate-early gene [human, placenta, mRNA Partial, (xi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (xii) D86988 Human mRNA for KIAA0221 gene, complete cds, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) U62317 Chromosome 22 q13 BAC Clone CIT987SK-384D8 complete sequence, (xv) X04412 Human mRNA for plasma gelsolin, (xvi) L27706 Human chaperonin protein (Tcp20) gene complete cds, (xvii) X61123 Human BTG1 mRNA, (xviii) M60974 growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xix) L19437 Human transaldolase mRNA containing transposable element, complete cds, (xx) X57985 H. sapiens genes for histones H2B.1 and H2A, (xxi) D90086 Human pyruvate dehydrogenase (EC 1.2.4.1) beta subunit gene, exons 1-10, (xxii) M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, (xxiii) L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, (xxiv) D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450Hkv), complete cd, (xxv) U37122 Human adducin gamma subunit mRNA, complete cds, (xxvi) D45906 H. sapiens mRNA for LIMK-2, complete cds, (xxvii) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (xxviii) D87438 Human mRNA for KIAA0251 gene, partial cds, (xxix) L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, (xxx) D14043 Human mRNA for MGC-24, complete cds, (xxxi) D13988 Human rab GDI mRNA, complete cds, (xxxii) U28480 Uncoupling Protein Uc, (xxxiii) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (xxxiv) M55265 Human casein kinase II alpha subunit mRNA, complete cds, (xxxv) M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, (xxxvi) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox P, (xxxvii) D87442 Human mRNA for KIAA0253 gene, partial cds, (xxxviii) J03161 Human serum response factor (SRF) mRNA, complete cds, (xxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (xl) U17327 Human neuronal nitric oxide synthase (NOS1) mRNA, complete cds, (xli) D86966 Human mRNA for KIAA0211 gene, complete cds, (xlii) D85527 H. sapiens mRNA for LIM domain, partial cds, (xliii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (xliv) X59434 Human rohu mRNA for rhodanese, (xlv) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, and (xlvi) J05211 Desmoplakin; (b) the second response comprises the altered pattern of expression of at least one protein that is at least 90% identical to a polypeptide encoded by a polynucleotide selected from the group consisting of: (i) M57731 Human gro-beta mRNA, complete cds, (ii) S81914 IEX-1-radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (iii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (iv) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (v) M72885 Human GOS2 gene, 5' flank and cds, (vi) M62831 Human transcription factor ETR101 mRNA, complete cds, (vii) M28130 Human interleukin 8 (IL8) gene, complete cds, (viii) X57985 H. sapiens genes for histones H2B.1 and H2A, (ix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (x) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xi) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xii) X56681 Human junD mRNA, (xiii) S75762 Oncogene Tls/Chop, Fusion Activate, (xiv) M84739 Human autoantigen calreticulin mRNA, complete cds, (xv) M21302 Human small proline rich protein (sprlI) mRNA, clone 174N, (xvi) V00599 Tubulin, Bet, (xvii) X70326 Macmarck, (xviii)

D10923 Human mRNA for HM74, (xix) D64142 Human mRNA for histone H1x, complete cds, (xx) D86974 Human mRNA for KIAA0220 gene, partial cds, (xxi) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xxii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (xxiii) L13391 Human helix-loop-helix basic phosphoprotein (GOS8) gene, complete cds, (xxiv) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (xxv) U40369 Human spermidine/spermine N1-acetyltransferase (SSAT) gene, complete cds, (xxvi) X52560 Nuclear Factor Nf-1I, (xxvii) X61123 Human BTG1 mRNA, (xxviii) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (xxix) U35048 Human TSC-22 protein mRNA, complete cds, (xxx) M69043 H. sapiens MAD-3 mRNA encoding IkB-like activity, complete cds, (xxxii) X51345 Human jun-B mRNA for JUN-B protein, (xxxiii) S68616 Na+/H+ exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], (xxxiii) X89750 H. sapiens mRNA for TGIF protein, (xxxiv) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein, (xxxv) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (xxxvi) X52541 Human mRNA for early growth response protein 1 (hEGR1), (xxxvii) D50683 H. sapiens mRNA for TGF-betaIIIR alpha, complete cds, (xxxviii) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (xxxix) X91247 H. sapiens mRNA for thioredoxin reductase, (xl) U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, comp, (xli) L19314 Human HRY gene, complete cds, (xlii) M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), (xliii) U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, (xliv) S78825 Id1, (xlv) D85429 H. sapiens gene for heat shock protein 40, complete cds, (xlvi) U41766 Human metalloprotease/disintegrin/cysteine-rich protein precursor (MDC9) mRNA, (xlvii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, (xlviii) M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, (xlix) D15050 Human mRNA for transcription factor AREB6, complete cds, (l) U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, (li) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (lii) X64330 H. sapiens mRNA for ATP-citrate lyase, (liii) U37122 Human adducin gamma subunit mRNA, complete cds, (liv) X74008 H. sapiens mRNA for protein phosphatase 1 gamma, (lv) U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, (lvi) X76534 H. sapiens NMB mRNA, (lvii) D87071 Human mRNA for KIAA0233 gene, complete cds, (lviii) U90716 Human cell surface protein HCAR mRNA, complete cds, (lix) M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, (ix) U29607 Human methionine aminopeptidase mRNA, complete cds, (lx) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (lxii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (lxiii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (lxiv) X12953 Human rab2 mRNA, YPT1-related and member of ras family, (lxv) M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, (lxvi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (lxvii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (lxviii) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (lxix) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (lxxi) S74017 Nrf2=NF-E2-like basic leucine zipper transcriptional activator [human, hemin-in, (lxxii) X87241 H. sapiens mRNA for hFat protein, (lxxiii) X52425 Human IL-4-R mRNA for the interleukin 4 receptor, (lxxiv) D79994 Human mRNA for KIAA0172 gene, partial cds, (lxxv) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (lxxvi) M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, (lxxvii) X78992 H. sapiens ERF-2 mRNA, (lxxviii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (lxxix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (lxxx) X52611 Human mRNA for transcription factor AP-2, (lxxxii) U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds, (lxxxiii) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (lxxxiii) L26336 Heat Shock Protein, 70 Kda (Gb:Y00371, (lxxxiv) L08246 Human myeloid cell differentiation protein (MCL1) mRNA, (lxxxv) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic, leukemia cells (lxxxvi) J05211 Desmoplakin, (lxxxvii) L00352 Human low density lipoprotein receptor gene, exon 18, (lxxxviii) Y13647 Stearyl-Coenzyme Desaturase, (lxxxix) X77794 H. sapiens mRNA for cyclin G1, (xc) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (xci) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (xcii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (xciii) X80692 H. sapiens ERK3 mRNA, and (xciv) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114; and (c) the

third response comprises the altered pattern of expression of at least one protein that is at least 90% identical to a polypeptide encoded by a polynucleotide selected from the group consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Huma elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H.sapiens genes for histones H2B.1 and H2A, (x) L05188 Homo sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H.sapiens p27 mRNA, (xiii) L19779 Homo sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H.sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H.sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H.sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H.sapiens mRNA for S100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 Homo sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxi) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxii) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxiii) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H.sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xlii) Z49254 H.sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splice, (xliv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv) AF006084 Homo sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlvi) X62083 H.sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlix) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (l) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H.sapiens EF-1delta gene encoding human elongation factor-1-delta, (ivii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lxii) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxiii) U41515 Human deleted in split hand/split foot 1 (DSS 1) mRNA, complete cds, (lxviii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19, (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 Homo sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds(carbox, (lxix) L42379 Homo sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H. sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p16INK4/MTS1 mRNA, complete cds, (lxxv) X92896 H.sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H.sapiens mRNA

translocon-associated protein delta subunit precursor, (lxxvii) L76568 Homo sapiens excision and cross link repair protein (ERCC4) gene, complete genome, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxi) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxii) U53830 Homo sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiii) X82693 H.sapiens mRNA for E48 antigen, (lxxxiv) M58026 Human NB-1 mRNA, complete cds, (lxxxv) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvi) X57579 H.sapiens activin beta-A subunit (exon 2), (lxxxvii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxviii) D89667 Homo sapiens mRNA for c-myc binding protein, complete cds, (lxxxix) AB000584 Homo sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci) J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H.sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H.sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H.sapiens PrP gene, exon 2, (xcviii) D89052 Homo sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (ci) M16364 Human creatine kinase-B mRNA, complete cds, (cii) D38305 Human mRNA for Tob, complete cds, (ciii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505 H.sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cv) X67951 H.sapiens mRNA for proliferation-associated gene (pag), (cvii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 Homo sapiens MAPKAP kinase (3 pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTF4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds,

(cxv) M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kDa subunit, (cxvii) X77794 H.sapiens mRNA for cyclin G1, (cxviii) M29064 Human hnRNP B1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H.sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 Homo sapiens cytidine dearninase (CDA) mRNA, complete cds, (cxxiv) L40391 Homo sapiens (clone s153) mRNA fragment, (cxxv) D42123 Homo sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H.sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 Homo sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H.sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxxx) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxii) L48546 Homo sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxii) X53586 Human mRNA for integrin alpha6, (cxxxiii) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxiv) L11066 Human mRNA sequence, (cxxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxxvi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxxvii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxxviii) X91247 H.sapiens mRNA for thioredoxin reductase, (cxxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxlii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlv) Y08915 H.sapiens mRNA for alpha 4 protein, (cxlvii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H.sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cli) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue ( MRL3=mammalian ribosome L, (clv) X78992

H.sapiens ERF-2 mRNA, (clvi) L41351 Homo sapiens prostasin mRNA, complete cds, (clvii) X75342 H.sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 Homo sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 Homo sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 Homo sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H.sapiens mRNA for desmoglein 2, (clxvi) L19267 Homo sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 Homo sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) gerilne c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 Homo sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 Homo sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H.sapiens mRNA for TGIF protein, (clxxx) D85429 Homo sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxii) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (clxxxiii) X80695 H.sapiens OXA1Hs mRNA, (clxxxiv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxv) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvi) D31883 Human mRNA for KIAA0059 gene, complete cds, (clxxxvii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxviii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H.sapiens mRNA for chloride channel (putative) 2139 bp, (cxci) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxcii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciii) X80692 H.sapiens ERK3 mRNA, (cxciv) X90858 H.sapiens mRNA for uridine phosphorylase, (cxcv) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvi) X92720 H.sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcviii) X52611 Human mRNA for transcription factor AP-2, (cxcix) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase STHM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H.sapiens HBZ17 mRNA, (cciii) X76534 H.sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, (ccxiii) U72066 Homo sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X69111 H.sapiens HLH 1R21 mRNA for helix-loop-helix protein.

99. The pharmaceutical composition of claim 96, wherein the third response further comprises proteins encoded by the nucleic acid molecules at least 90% identical to the polynucleotides of the group consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Huma elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H.sapiens

genes for histones H2B.1 and H2A, (x) L05188 Homo sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H.sapiens p27 mRNA, (xiii) L19779 Homo sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H.sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H.sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H.sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H.sapiens mRNA for S100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 Homo sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxi) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxii) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxiii) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II subunit (hsRPB 10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H.sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xli) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xlii) Z49254 H.sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splice, (xliv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv) AF006084 Homo sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlvi) X62083 H.sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlix) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (1) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H.sapiens EF-1delta gene encoding human elongation factor-1-delta, (lvii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H.sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lx) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19, (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 Homo sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds(carbox, (lxix) L42379 Homo sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H.sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p16INK4/MTS1 mRNA, complete cds, (lxxv) X92896 H.sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H.sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 Homo sapiens excision and cross link repair protein (ERCC4) gene, complete genom, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxii) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxiii) U53830 Homo sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiv) X82693 H.sapiens mRNA for E48 antigen, (lxxxv) M58026 Human NB-1 mRNA, complete cds, (lxxxv) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvi) X57579

H.sapiens activin beta-A subunit (exon 2), (lxxxvii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxviii) D89667 Homo sapiens mRNA for c-myc binding protein, complete cds, (lxxxix) AB000584 Homo sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci) J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H. sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H.sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H.sapiens PrP gene, exon 2, (xcviii) D89052 Homo sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human creatine kinase-B mRNA, complete cds, (ci) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505 H.sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cvi) X67951 H.sapiens mRNA for proliferation-associated gene (pag), (cvii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 Homo sapiens MAPKAP kinase (3 pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTF4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kDa subunit, (cxvii) X77794 H.sapiens mRNA for cyclin G1, (cxviii) M29064 Human hnRNP B1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H.sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 Homo sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 Homo sapiens (clone s153) mRNA fragment, (cxxv) D42123 Homo sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H.sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 Homo sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H.sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxxxi) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxx) L48546 Homo sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxii) X53586 Human mRNA for integrin alpha 6, (cxxxiii) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxiv) L11066 Human mRNA sequence, (cxxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxxvi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxxvii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxxviii) X91247 H.sapiens mRNA for thioredoxin reductase, (cxxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlv) Y08915 H.sapiens mRNA for alpha 4 protein, (cxlvii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H.sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cl) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue ( MRL3=mammalian ribosome L, (clv) X78992 H.sapiens ERF-2 mRNA, (clvi) L41351 Homo sapiens prostasin mRNA, complete cds, (clvii) X75342 H.sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 Homo sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 Homo sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 Homo sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H.sapiens mRNA for desmoglein 2, (clxvi) L19267 Homo sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP

mRNA, complete cds, (clxx) L31801 Homo sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 Homo sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 Homo sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H.sapiens mRNA for TGIF protein, (clxxx) D85429 Homo sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxiii) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (clxxxiv) X80695 H.sapiens OXA1Hs mRNA, (clxxxv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxv) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvi) D31883 Human mRNA for KIAA0059 gene, complete cds, (clxxxvii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxviii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H.sapiens mRNA for chloride channel (putative) 2139 bp, (cxcii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxciii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciv) X80692 H.sapiens ERK3 mRNA, (cxcv) X90858 H.sapiens mRNA for uridine phosphorylase, (cxcvi) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvii) X92720 H.sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcviii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcix) X52611 Human mRNA for transcription factor AP-2, (ccx) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H.sapiens HBZ17 mRNA, (cciii) X76534 H.sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCAP78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, (ccxiii) U72066 Homo sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, (ccxx) X69111 H.sapiens HLH 1R21 mRNA for helix-loop-helix protein. (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Huma elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H.sapiens genes for histones H2B.1 and H2A, (x) L05188 Homo sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H.sapiens p27 mRNA, (xiii) L19779 Homo sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1-radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H.sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H.sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H.sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H.sapiens mRNA for S100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete

cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 Homo sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxi) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxii) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxiii) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H.sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xlii) Z49254 H.sapiens L23-related mRNA, (xliii) M22919 Myosin,

Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splic, (xliv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv) AF006084 Homo sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlvi) X62083 H.sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlix) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (l) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H.sapiens EF-1delta gene encoding human elongation factor-1-delta, (lvii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H.sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lxi) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS1) rrRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19, (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 Homo sapiens mRNA for ceramnide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds(carbox, (lxix) L42379 Homo sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H.sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p16INK4/MTS1 mRNA, complete cds, (lxxv) X92896 H.sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H.sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 Homo sapiens excision and cross link repair protein (ERCC4) gene, complete genome, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxi) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxii) U53830 Homo sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiii) X82693 H.sapiens mRNA for E48 antigen, (lxxxiv) M58026 Human NB-1 mRNA, complete cds, (lxxxv) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvi) X57579 H.sapiens activin beta-A subunit (exon 2), (lxxxvii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxviii) D89667 Homo sapiens mRNA for c-myc binding protein, complete cds, (lxxxix) AB000584 Homo sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci) J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H. sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H.sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H.sapiens PrP gene, exon 2, (xcviii) D89052 Homo sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human creatine kinase-B mRNA, complete cds, (ci) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505 H.sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813

Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cvii) X67951 H.sapiens mRNA for proliferation-associated gene (pag), (cviii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviiii) U09578 Homo sapiens MAPKAP kinase (3' pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTf4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kDa subunit, (cxvii) X77794 H. sapiens mRNA for cyclin G1, (cxviii) M29064 Human hnRNP B1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H.sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 Homo sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 Homo sapiens (clone s153) mRNA fragment, (cxxv) D42123 Homo sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H.sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 Homo sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H.sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxxx) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxii) L48546 Homo sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxiii) X53586 Human mRNA for integrin alpha 6, (cxxxiii) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxiv) L11066 Human mRNA sequence, (cxxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxxvi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxxvii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxxviii) X91247 H.sapiens mRNA for thioredoxin reductase, (cxxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlvi) Y08915 H.sapiens mRNA for alpha 4 protein, (cxlvii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H.sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cl) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue ( MRL3=mammalian ribosome L, (clv) X78992 H.sapiens ERF-2 mRNA, (clvi) L41351 Homo sapiens prostasin mRNA, complete cds, (clvii) X75342 H.sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIMI) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 Homo sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 Homo sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 Homo sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H.sapiens mRNA for desmoglein 2, (clxvi) L19267 Homo sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 Homo sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 Homo sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 Homo sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H.sapiens mRNA for TGIF protein, (clxxx) D85429 Homo sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxii) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (clxxxiii) X80695 H.sapiens OXA1Hs mRNA, (clxxxiv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxv) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvi) D31883 Human mRNA for KIAA0059

gene, complete cds, (clxxxvii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxviii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H.sapiens mRNA for chloride channel (putative) 2139 bp, (cxcii) D14520 Human mRNA for GC-Box binding protein BTB2, complete cds, (cxcii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciii) X80692 H.sapiens ERK3 mRNA, (cxciv) X90858 H.sapiens mRNA for uridine phosphorylase, (cxcv) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvi) X92720 H.sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcviii) X52611 Human mRNA for transcription factor AP-2, (cxcix) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H.sapiens HBZ17 mRNA, (cciii) X76534 H.sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACLI) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrrolidine 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, (ccxiii) U72066 Homo sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X69111 H.sapiens HLH 1R21 mRNA for helix-loop-helix protein.

103. The method according to claim 102, wherein: (a) the first response is further limited to nucleic acid molecules at least 90% identical to the polynucleotides of the group consisting of: (i) M62831 Human transcription factor ETR101 mRNA, complete cds, (ii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (iii) L04731 H. sapiens translocation T(4:11) of ALL-1 gene to chromosome 4; (iv) X56681 Human junD mRNA, (v) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (vi) L38951 H. sapiens importin beta subunit mRNA, complete cds, (vii) D87071 Human mRNA for KIAA0233 gene, complete cds, (viii) M72885 Human GOS2 gene, 5' flank and cds, (ix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (x) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, (xi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (xii) D86988 Human mRNA for KIAA0221 gene, complete cds, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) U62317 Chromosome 22q13 BAC Clone CIT987SK-384D8 complete sequence, (xv) X04412 Human mRNA for plasma gelsolin, (xvi) L27706 Human chaperonin protein Tcp20 gene complete cds, (xvii) X61123 Human BTG1 mRNA, (xviii) M60974growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xix) L19437 Human transaldolase mRNA containing transposable element, complete cds, (xx) X57985 H. sapiens genes for histones H2B.1 and H2A, (xxi) D90086 Human pyruvate dehydrogenase (EC 1.2.4.1) beta subunit gene, exons 1-10, (xxii) M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, (xxiii) L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, (xxiv) D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450HVK), complete cd, (xxv) U37122 Human adducin gamma subunit mRNA, complete cds, (xxvi) D45906 H. sapiens mRNA for LIMK-2, complete cds, (xxvii) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (xxviii) D87438 Human mRNA for KIAA0251 gene, partial cds, (xxix) L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, (xxx) D14043 Human mRNA for MGC-24, complete cds, (xxxi) D13988 Human rab GDI mRNA, complete cds, (xxxii) U28480 Uncoupling Protein Uc, (xxxiii) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (xxxiv) M55265 Human casein kinase II alpha subunit mRNA, complete cds, (xxxv) M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, (xxxvi) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox P, (xxxvii) D87442 Human mRNA for KIAA0253 gene, partial cds, (xxxviii) J03161 Human serum response factor (SRF) mRNA, complete cds, (xxxix) D86965 Human mRNA for KIAA0210

gene, complete cds, (x1) U17327 Human neuronal nitric oxide synthase (NOS1) mRNA, complete cds, (xli) D86966 Human mRNA for KIAA0211 gene, complete cds, (xlvi) D85527 H. sapiens mRNA for LIM domain, partial cds, (xliii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (xliv) X59434 Human rohu mRNA for rhodanese, (xlv) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, and (xlvi) J05211 Desmoplakin; (b) the second response is further limited to nucleic acid molecules at least 90% identical to the polynucleotides of the group consisting of: (i) M57731 Human gro-beta mRNA, complete cds, (ii) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (iii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (iv) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (v) M72885 Human GOS2 gene, 5' flank and cds, (vi) M62831 Human transcription factor ETR101 mRNA, complete cds, (vii) M28130 Human interleukin 8 (IL8) gene, complete cds, (viii) X57985 H. sapiens genes for histones H2B.1 and H2A, (ix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (x) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xi) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xii) X56681 Human junD mRNA, (xiii) S75762 Oncogene Tls/Chop, Fusion Activate, (xiv) M84739 Human autoantigen calreticulin mRNA, complete cds, (xv) M21302 Human small proline rich protein (sprlI) mRNA, clone 174N, (xvi) V00599 Tubulin, Bet, (xvii) X70326 Macmarck, (xviii) D10923 Human mRNA for HM74, (xix) D64142 Human mRNA for histone H1x, complete cds, (xx) D86974 Human mRNA for KIAA0220 gene, partial cds, (xxi) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xxii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (xxiii) L13391 Human helix-loop-helix basic phosphoprotein (GOS8) gene, complete cds, (xxiv) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (xxv) U40369 Human spermidine/spermine N1-acetyltransferase (SSAT) gene, complete cds, (xxvi) X52560 Nuclear Factor Nf-1I, (xxvii) X61123 Human BTG1 mRNA, (xxviii) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (xxix) U35048 Human TSC-22 protein mRNA, complete cds, (xxx) M69043 H. sapiens MAD-3 mRNA encoding IkB-like activity, complete cds, (xxxi) X51345 Human jun-B mRNA for JUN-B protein, (xxxii) S68616 Na+/H+ exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], (xxxiii) X89750 H. sapiens mRNA for TGIF protein, (xxxiv) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein, (xxxv) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (xxxvi) X52541 Human mRNA for early growth response protein 1 (hEGR1), (xxxvii) D50683 H. sapiens mRNA for TGF-beta1IR alpha, complete cds, (xxxviii) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (xxxix) X91247 H. sapiens mRNA for thioredoxin reductase, (xl) U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, comp, (xli) L19314 Human HRY gene, complete cds, (xlii) M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), (xliii) U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, (xliv) S78825 Id1, (xlv) D85429 H. sapiens gene for heat shock protein 40, complete cds, (xlvi) U41766 Human metalloprotease/disintegrin/cysteine-rich protein precursor (MDC9) mRNA, (xlvii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, (xlviii) M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, (xlix) D15050 Human mRNA for transcription factor AREB6, complete cds, (li) U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, (li) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (lii) X64330 H. sapiens mRNA for ATP-citrate lyase, (liii) U37122 Human adducin gamma subunit mRNA, complete cds, (liv) X74008 H. sapiens mRNA for protein phosphatase 1 gamma, (lv) U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, (lvi) X76534 H. sapiens NMB mRNA, (lvii) D87071 Human mRNA for KIAA0233 gene, complete cds, (lviii) U90716 Human cell surface protein HCAR mRNA, complete cds, (lix) M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, (lx) U29607 Human methionine aminopeptidase mRNA, complete cds, (lxi) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (lxii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (lxiii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (lxiv) X12953 Human rab2 mRNA, YPT1-related and member of ras family, (lxv) M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, (lxvi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (lxvii) D14520 Human mRNA for GC-Box binding protein BTB2, complete cds, (lxviii) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (lxix) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (lxxi) S74017

Nrf2=NF-E2-like basic leucine zipper transcriptional activator [human, hemin-in, (lxxii) X87241 H. sapiens mRNA for hFat protein, (lxxiii) X52425 Human IL-4-R mRNA for the interleukin 4 receptor, (lxxiv) D79994 Human mRNA for KIAA0172 gene, partial cds, (lxxv) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (lxxvi) M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, (lxxvii) X78992 H. sapiens ERF-2 mRNA, (lxxviii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (lxxix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (lxxx) X52611 Human mRNA for transcription factor AP-2, (lxxxii) U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds, (lxxxiii) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (lxxxiii) L26336 Heat Shock Protein, 70 Kda (Gb:Y00371, (lxxxiv) L08246 Human myeloid cell differentiation protein (MCL1) mRNA, (lxxxv) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic, leukemia cells (lxxxvi) J05211 Desmoplakin, (lxxxvii) L00352 Human low density lipoprotein receptor gene, exon 18, (lxxxviii) Y13647 Stearoyl-Coenzyme A Desaturase, (lxxxix) X77794 H. sapiens mRNA for cyclin G1, (xc) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (xci) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (xcii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (xciii) X80692 H. sapiens ERK3 mRNA, and (xciv) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114; and (c) the third response is further limited to nucleic acid molecules at least 90% identical to the polynucleotides of the group consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Human elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H. sapiens genes for histones H2B.1 and H2A, (x) L05188 Homo sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H. sapiens p27 mRNA, (xiii) L19779 Homo sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1-radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H. sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H. sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H. sapiens mRNA for S100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 Homo sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxx) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxxi) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxxii) V00599 Tubulin, Beta, (xxxxiii) U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, (xxxxiv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxxv) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxxvi) Z49989 H. sapiens mRNA for smoothelin, (xxxxvii) L24564 Human Rad mRNA, complete cds, (xxxxviii) D49824 Human HLA-B null allele mRNA, (xli) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xlii) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xliii) Z49254 H. sapiens L23-related mRNA, (xliv) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splice, (xlv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlvi) AF006084 Homo sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlvi) X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlxi) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (1) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase

mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H.sapiens EF-1delta gene encoding human elongation factor-1-delta, (ivii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lxi) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS 1) mRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19. (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 Homo sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds(carbox, (lxix) L42379 Homo sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H. sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p16INK4/MTS1 mRNA, complete cds, (lxxv) X92896 H.sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H.sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 Homo sapiens excision and cross link repair protein (ERCC4) gene, complete genome, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxi) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxii) U53830 Homo sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiii) X82693 H.sapiens mRNA for E48 antigen, (lxxxiv) M58026 Human NB-1 mRNA, complete cds, (lxxxv) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvi) X57579 H.sapiens activin beta-A subunit (exon 2), (lxxxvii) D38251 Human mRNA for RP85 (XAP4), complete cds, (lxxxviii) D89667 Homo sapiens mRNA for c-myc binding protein, complete cds, (lxxxix) AB000584 Homo sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci) J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H.sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H.sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H.sapiens PrP gene, exon 2, (xcviii) D89052 Homo sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (ci) M16364 Human creatine kinase-B mRNA, complete cds, (cii) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505 H.sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cvii) X67951 H.sapiens mRNA for proliferation-associated gene (pag), (cvii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 Homo sapiens MAPKAP kinase (3 pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTF4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kDa subunit, (cxvii) X77794 H.sapiens mRNA for cyclin G1,

(cxviii) M29064 Human hnRNP B1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H.sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 Homo sapiens cytidine dearninase (CDA) mRNA, complete cds, (cxxiv) L40391 Homo sapiens (clone s153) mRNA fragment, (cxxv) D42123 Homo sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H.sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 Homo sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H.sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxxx) U07664 Human HB9 homeobox gene,

exons 2 and 3 and complete cds, (cxxxii) L48546 Homo sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxiii) X53586 Human mRNA for integrin alpha6, (cxxxiv) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxv) L11066 Human mRNA sequence, (cxxxvi) J04444 Human cytochrome c-1 gene, complete cds, (cxxxvii) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxxviii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxxix) X91247 H.sapiens mRNA for thioredoxin reductase, (cxxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlvii) Y08915 H.sapiens mRNA for alpha 4 protein, (cxlviii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H.sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cli) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue ( MRL3=mammalian ribosome L, (clv) X78992 H.sapiens ERF-2 mRNA, (clvi) L41351 Homo sapiens prostasin mRNA, complete cds, (clvii) X75342 H.sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR- 1) mRNA, complete cds, (clxii) M58286 Homo sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 Homo sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 Homo sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H.sapiens mRNA for desmoglein 2, (clxvi) L19267 Homo sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 Homo sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) gerilin c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 Homo sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 Homo sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H.sapiens mRNA for TGIF protein, (clxxx) D85429 Homo sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxiii) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (clxxxiv) X80695 H.sapiens OXA1Hs mRNA, (clxxxv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxvi) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxviii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H.sapiens mRNA for chloride channel (putative) 2139 bp, (cxcii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxciii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciv) X80692 H.sapiens ERK3 mRNA, (cxcv) X90858 H.sapiens mRNA for uridine phosphorylase, (cxcv) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvi) X92720 H.sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcviii) X52611 Human mRNA for transcription factor AP-2, (cxcix) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H.sapiens HBZ17 mRNA, (cciii) X76534 H.sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrrolidine 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene

Tls/Chop, Fusion Activated, (ccxiii) U72066 Homo sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X69111 H.sapiens HLH 1R21 mRNA for helix-loop-helix protein.

105. The method according to claim 104, wherein: (a) the first response is further limited to proteins at least 90% identical to the proteins encoded by the polynucleotides of the group consisting of: (i) M62831 Human transcription factor ETR101 mRNA, complete cds, (ii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (iii) L04731 H. sapiens translocation T(4;11) of ALL-1 gene to chromosome 4, (iv) X56681 Human junD mRNA, (v) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (vi) L38951 H. sapiens importin beta subunit mRNA, complete cds, (vii) D87071 Human mRNA for KIAA0233 gene, complete cds, (viii) M72885 Human GOS2 gene, 5' flank and cds, (ix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (x) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, (xi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (xii) D86988 Human mRNA for KIAA0221 gene, complete cds, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) U62317 Chromosome 22q13 BAC Clone CIT987SK-384D8 complete sequence, (xv) X04412 Human mRNA for plasma gelsolin, (xvi) L27706 Human chaperonin protein Tcp20) gene complete cds, (xvii) X61123 Human BTG1 mRNA, (xviii) M60974growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xix) L19437 Human transaldolase mRNA containing transposable element, complete cds, (xx) X57985 H. sapiens genes for histones H2B.1 and H2A, (xxi) D90086 Human pyruvate dehydrogenase (EC 1.2.4.1) beta subunit gene, exons 1-10, (xxii) M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, (xxiii) L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, (xxiv) D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450Hkv), complete cd, (xxv) U37122 Human adducin gamma subunit mRNA, complete cds, (xxvi) D45906 H. sapiens mRNA for LIMK-2, complete cds, (xxvii) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (xxviii) D87438 Human mRNA for KIAA0251 gene, partial cds, (xxix) L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, (xxx) D14043 Human mRNA for MGC-24, complete cds, (xxxi) D13988 Human rab GDI mRNA, complete cds, (xxxii) U28480 Uncoupling Protein Uc, (xxxiii) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (xxxiv) M55265 Human casein kinase II alpha subunit mRNA, complete cds, (xxxv) M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, (xxxvi) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox P, (xxxvii) D87442 Human mRNA for KIAA0253 gene, partial cds, (xxxviii) J03161 Human serum response factor (SRF) mRNA, complete cds, (xxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (xl) U17327 Human neuronal nitric oxide synthase (NOS1) mRNA, complete cds, (xli) D86966 Human mRNA for KIAA0211 gene, complete cds, (xlii) D85527 H. sapiens mRNA for LIM domain, partial cds, (xliii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (xliv) X59434 Human rohu mRNA for rhodanese, (xlv) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, and (xlvi) J05211 Desmoplaki. (b) the second response is further limited to proteins at least 90% identical to the proteins encoded by the polynucleotides of the group consisting of: (i) M57731 Human gro-beta mRNA, complete cds, (ii) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (iii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (iv) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (v) M72885 Human GOS2 gene, 5' flank and cds, (vi) M62831 Human transcription factor ETR101 mRNA, complete cds, (vii) M28130 Human interleukin 8 (IL8) gene, complete cds, (viii) X57985 H. sapiens genes for histones H2B.1 and H2A, (ix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (x) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xi) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xii) X56681 Human junD mRNA, (xiii) S75762 Oncogene Tls/Chop, Fusion Activate, (xiv) M84739 Human autoantigen calreticulin mRNA, complete cds, (xv) M21302 Human small proline rich protein (sprlI) mRNA, clone 174N, (xvi) V00599 Tubulin, Bet, (xvii) X70326 Macmarck, (xviii) D10923 Human mRNA for HM74, (xix) D64142 Human mRNA for histone H1x, complete cds,

(xx) D86974 Human mRNA for KIAA0220 gene, partial cds, (xxi) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xxii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (xxiii) L13391 Human helix-loop-helix basic phosphoprotein (GOS8) gene, complete cds, (xxiv) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (xxv) U40369 Human spermidine/spermine N1-acetyltransferase (SSAT) gene, complete cds, (xxvi) X52560 Nuclear Factor Nf-II, (xxvii) X61123 Human BTG1 mRNA, (xxviii) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (xxix) U35048 Human TSC-22 protein mRNA, complete cds, (xxx) M69043 H. sapiens MAD-3 mRNA encoding IκB-like activity, complete cds, (xxxii) X51345 Human jun-B mRNA for JUN-B protein, (xxxii) S68616 Na<sup>+</sup>/H<sup>+</sup> exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], (xxxiii) X89750 H. sapiens mRNA for TGIF protein, (xxxiv) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein, (xxxv) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (xxxvi) X52541 Human mRNA for early growth response protein 1 (hEGR1), (xxxvii) D50683 H. sapiens mRNA for TGF-beta1IR alpha, complete cds, (xxxviii) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (xxxix) X91247 H. sapiens mRNA for thioredoxin reductase, (xl) U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, comp, (xli) L19314 Human HRY gene, complete cds, (xlii) M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), (xliii) U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, (xliv) S78825 Id1, (xlv) D85429 H. sapiens gene for heat shock protein 40, complete cds, (xlvi) U41766 Human metalloprotease/disintegrin/cysteine-rich protein precursor (MDC9) mRNA, (xlvii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, (xlviii) M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, (xlix) D15050 Human mRNA for transcription factor AREB6, complete cds, (li) U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, (lii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (lii) X64330 H. sapiens mRNA for ATP-citrate lyase, (liii) U37122 Human adducin gamma subunit mRNA, complete cds, (liv) X74008 H. sapiens mRNA for protein phosphatase 1 gamma, (lv) U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, (lvi) X76534 H. sapiens NMB mRNA, (lvii) D87071 Human mRNA for KIAA0233 gene, complete cds, (lviii) U90716 Human cell surface protein HCAR mRNA, complete cds, (lix) M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, (lx) U29607 Human methionine aminopeptidase mRNA, complete cds, (lxi) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (lxii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (lxiii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (lxiv) X12953 Human rab2 mRNA, YPT1-related and member of ras family, (lxv) M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, (lxvi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (lxvii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (lxviii) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (lxix) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (lxxi) S74017 Nrf2=NF-E2-like basic leucine zipper transcriptional activator [human, hemin-in, (lxxii) X87241 H. sapiens mRNA for hFat protein, (lxxiii) X52425 Human IL-4-R mRNA for the interleukin 4 receptor, (lxxiv) D79994 Human mRNA for KIAA0172 gene, partial cds, (lxxv) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (lxxvi) M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, (lxxvii) X78992 H. sapiens ERF-2 mRNA, (lxxviii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (lxxix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (lxxx) X52611 Human mRNA for transcription factor AP-2, (lxxxii) U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds, (lxxxiii) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (lxxxiii) L26336 Heat Shock Protein, 70 Kda (Gb:Y00371, (lxxxiv) L08246 Human myeloid cell differentiation protein (MCL1) mRNA, (lxxxv) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic, leukemia cells (lxxxvi) J05211 Desmoplakin, (lxxxvii) L00352 Human low density lipoprotein receptor gene, exon 18, (lxxxviii) Y13647 Stearyl-Coenzyme Desaturase, (lxxxix) X77794 H. sapiens mRNA for cyclin G1, (xc) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (xcii) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (xcii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (xciii) X80692 H. sapiens ERK3 mRNA, and (xciv) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114; and (c) the third response is further limited to proteins at least 90% identical to the proteins

encoded by the polynucleotides of the group consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Huma elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H.sapiens genes for histones H2B.1 and H2A, (x) L05188 Homo sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H.sapiens p27 mRNA, (xiii) L19779 Homo sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H.sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H.sapiens cyclophilin isoform (hCyP3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H.sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H.sapiens mRNA for S100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 Homo sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxi) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxii) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxiii) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H.sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20 nRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xlii) Z49254 H.sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splic, (xliv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv) AF006084 Homo sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlvi) X62083 H.sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlix) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (l) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H.sapiens EF-1delta gene encoding human elongation factor-1-delta, (ivii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H.sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lxi) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS 1) mRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19, (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 Homo sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds(carbox, (lxix) L42379 Homo sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H. sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p16INK4/MTS1 mRNA, complete cds, (lxxv) X92896 H.sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H.sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 Homo sapiens excision and cross link repair protein (ERCC4) gene, complete genom, (lxxviii)

M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937  
Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L  
mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxii) M34516 Human  
omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxiii)  
U53830 Homo sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiii)  
X82693 H.sapiens mRNA for E48 antigen, (lxxxiv) M58026 Human NB-1 mRNA, complete  
cds, (lxxxv) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvi) X57579  
H.sapiens activin beta-A subunit (exon 2), (lxxxvii) D38251 Human mRNA for RPB5  
(XAP4), complete cds, (lxxxviii) D89667 Homo sapiens mRNA for c-myc binding protein,  
complete cds, (lxxxix) AB000584 Homo sapiens mRNA for TGF-beta superfamily protein,  
complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci)  
J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex  
polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022  
H.sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA,  
complete cds, (xcvi) X71129 H.sapiens mRNA for electron transfer flavoprotein beta  
subunit, (xcvii) X83416 H.sapiens PrP gene, exon 2, (xcviii) D89052 Homo sapiens  
mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest  
and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human  
creatine kinase-B mRNA, complete cds, (ci) D38305 Human mRNA for Tob, complete cds,  
(cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505  
H.sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813  
Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc,  
(cvii) X67951 H.sapiens mRNA for proliferation-associated gene (pag), (cvii) J04611  
Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 Homo  
sapiens MAPKAP kinase (3 pK) mRNA, complete cds, (cix) X53800 Human mRNA for  
macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi)  
U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human  
mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human  
butyrophilin (BTFA) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein  
(RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human cytochrome c oxidase subunit  
Vb (coxVb) mRNA, complete cds, (cxvi) U65579 Human mitochondrial NADH  
dehydrogenase-ubiquinone Fe-S protein 8, 23 kDa subunit, (cxvii) X77794 H.sapiens  
mRNA for cyclin G1,

(cxviii) M29064 Human hnRNP B1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111  
gene, complete cds, (cxx) X78687 H.sapiens G9 gene encoding sialidase, (cxxi) X15729  
Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein  
alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 Homo sapiens  
cytidine dearninase (CDA) mRNA, complete cds, (cxxiv) L40391 Homo sapiens (clone  
s153) mRNA fragment, (cxxv) D42123 Homo sapiens mRNA for ESP1/CRP2, complete cds,  
(cxxvi) X74104 H.sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human  
ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 Homo sapiens RNA  
polymerase II mRNA, complete cds, (cxxix) M92843 H.sapiens zinc finger  
transcriptional regulator mRNA, complete cds, (cxxx) U07664 Human HB9 homeobox gene,  
exons 2 and 3 and complete cds, (cxxxii) L48546 Homo sapiens tuberin (TSC2) gene,  
exons 38, 39, 40 and 41, (cxxxii) X53586 Human mRNA for integrin alpha6, (cxxxiii) t  
D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxiv) L11066 Human mRNA  
sequence, (cxxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxxvi) M95787  
Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxxvii) L07517 Mucin  
6, Gastric (Gb:L07517), (cxxxviii) X91247 H.sapiens mRNA for thioredoxin reductase,  
(cxxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete  
cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein  
kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii)  
X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating  
enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain  
mRNA, complete cds, (cxlvii) Y08915 H.sapiens mRNA for alpha 4 protein, (cxlviii)  
M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717  
H.sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3'  
cds, (cl) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC  
1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603  
Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds,  
(cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv)  
X06323 Human MRL3 mRNA for ribosomal protein L3 homologue ( MRL3=mammalian ribosome  
L, (clv) X78992 H.sapiens ERF-2 mRNA, (clvi) L41351 Homo sapiens prostasin mRNA,  
complete cds, (clvii) X75342 H.sapiens SHB mRNA, (clviii) U83115 Human non-lens beta

gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR- 1) mRNA, complete cds, (clxii) M58286 Homo sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 Homo sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 Homo sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H.sapiens mRNA for desmoglein 2, (clxvi) L19267 Homo sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 Homo sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) gerilne c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 Homo sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 Homo sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H.sapiens mRNA for TGIF protein, (clxxx) D85429 Homo sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxiii) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (clxxxiv) X80695 H.sapiens OXA1Hs mRNA, (clxxxv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxv) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvi) D31883 Human mRNA for KIAA0059 gene, complete cds, (clxxxvii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxviii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H.sapiens mRNA for chloride channel (putative) 2139 bp, (cxci) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxcii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciii) X80692 H.sapiens ERK3 mRNA, (cxciv) X90858 H.sapiens mRNA for uridine phosphorylase, (cxcv) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvi) X92720 H.sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcviii) X52611 Human mRNA for transcription factor AP-2, (cxcix) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H.sapiens HBZ17 mRNA, (cciii) X76534 H.sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrrolidine 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, (ccxiii) U72066 Homo sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X69111 H.sapiens HLH 1R21 mRNA for helix-loop-helix protein.

Full	Title	Citation	Front	Review	Classification	Date	References	Sequences	Attachments
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KMC	Draw Desc	Image
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L1: Entry 11 of 50

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## INVENTOR-INFORMATION:

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Hoeffler, James Paul	Carlsbad	CA	US	

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## ABSTRACT:

The invention described herein comprises libraries of expressible gene sequences. Such gene sequences are contained on plasmid vectors designed to endow the expressed proteins with a number of useful features such as affinity purification tags, epitope tags, and the like. The expression vectors containing such gene sequences can be used to transfect cells for the production of recombinant proteins. A further aspect of the invention comprises methods of identifying binding partners for the products of such expressible gene sequences.

L1: Entry 11 of 50

File: PGPB

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DOCUMENT-IDENTIFIER: US 20030073163 A1

TITLE: Libraries of expressible gene sequences

## Detail Description Table CWU (53):

kinase mRNA 55 46.49 215-2 H-U34822 human JNK1 alpha2 protein 55 47.04 kinase (JNK1A2) mRNA 169-37 H-U35002 human JNK2 betal protein kinase 50 42.09 (JNK2B1) mRNA 169-25 H-U35003 human JNK2 beta2 protein kinase 55 46.71 (JNK2B2) mRNA 167-16 H-U35004 human JNK1 betal protein kinase 52 42.31 (JNK1B1) mRNA M300 B2 H-U35048 TSC-22 protein 15.95 27 M423 E5 H-U35398 Human G protein-coupled 40.26 48.0 kDa receptor mRNA, complete cds A3 H-U35735 Human RACH1 (RACH1) 42.9 78 mRNA, complete cds M250 E5 H-U36764 Eukaryotic translation initiation 35.86 36.0 kDa factor 3 (eIF-3) p36 subunit, transforming growth factor-beta receptor II interacting protein 1 M270 E4 H-U37283 microfibril-associated 19.14 32 glycoprotein-2 (GB: U37283) M426 F3 H-U37352 Protein phosphatase 2A, 56.65 55.0 kDa regulatory subunit B'alpha-1 E1 H-U37529 Human substance P beta-PPT-A 14.3 22 mRNA, complete cds M305 H5 H-U37547 apoptosis inhibitor 68.09 64 M424 D5 H-U38480 Human retinoid X receptor- 51.04 61.0 kDa gamma mRNA, complete cds M270 F4 H-U38810 Human mab-21 cell fate- determining protein homolog (CAGR1) mRNA, M467 F6 H-U38904 Human zinc finger protein C2H2- 40.48 47.0 kDa 25 mRNA, complete cds E2 H-U39318 Human E2 ubiquitin conjugating 16.28 22 enzyme UbcH5C (UBCH5C) mRNA, complete cds 166-75 H-U39657 human MAP kinase kinase 6 40 36.81 (MKK6) mRNA M298 E4 H-U39945 human adenylyl kinase 2 (adk2) 26.3633 38.0 kDa mRNA 166-38 H-U40282 human integrin-linked kinase 55 49.68 (ILK) mRNA 169-65 H-U40343 human CDK inhibitor p19INK4d 18 18.33 mRNA E2 H-U40705 Homo sapiens telomeric repeat 48.4 52 binding factor (TRF1) mRNA, complete cds 166-50 H-U40989 human tat interactive protein 60 53.09 mRNA M266 H6 H-U41767 metargidin precursor 89.65 90 M270 F3 H-U41804 Human putative T1/ST2 receptor 25.08 35.0 kDa binding protein precursor mRNA, complete cds D5 H-U42360 Human N33 gene 38.28 38 A1 H-U43368 Vascular endothelial growth 22.88 33 factor B M421 G7 H-U43901 Human 37 kD laminin receptor 32.56 58.0 kDa precursor/p40 ribosome associated protein gene, complete cds M392 C2 H-U43923 transcription factor SUPTH4 12.98 16.0 kDa E2 H-U46024 Myotubular myopathy 1 66.44 58 M330 A1 H-U46838 p105MCM 90.42 97 M476 E2 H-U47677 Human transcription factor E2F1 48.18 53.0 kDa (E2F1) gene, promoter and M421 H1 H-U48707 Human protein phosphatase-1 18.92 36.0 kDa inhibitor mRNA, complete cds M302 B7 H-U49070 peptidyl-prolyl isomerase PIN1 18.04 28.0 kDa C1 H-U49188 Human placenta

(Diff33) mRNA, 54.45 70 complete cds M485 H2 H-U49837 Human LIM protein MLP mRNA, 21.45 34.0 kDa complete cds D2 H-U49897 Homo sapiens phenylalanine 49.83 64 hydroxylase (PAH) mRNA, complete cds B2 H-U49957 Human LIM protein (LPP) 67.43 67 mRNA, partial cds 166-16 H-U50196 human adenosine kinase mRNA 50 38.02 A4 H-U50939 Human amyloid precursor 58.85 60 protein-binding protein 1 mRNA, complete cds G3 H-U51224 Human U2AFBPL gene, complete 52.8 55 cds M486 E3 H-U51333 Hexokinase 3 (white cell) 101.64 100.0 kDa M305 D1 H-U51478 ATPase, Na<sup>+</sup>/K<sup>+</sup> transporting, 30.8 36 beta 3 subunit M416 H3 H-U52112 Homo sapiens Xq28 genomic 25.96 36.0 kDa DNA in the region of the L1CAM locus containing the genes for neural cell adhesion molecule L1 (L1CAM), arginine-vasopressin receptor (AVPR2), C1 p115 (C1), ARD1 N-acetyltransferase related protein (TE2), renin-binding protein (RbP), host cell factor 1 (HCF1), and interleukin-1 receptor-associated kinase (IRAK) genes, complete cds, and Xq28lu2 gene M463 E1 H-U53442 human p38Beta MAP kinase 40.99 49.0 kDa mRNA G3 H-U53446 Human mitogen-responsive 84.81 98 phosphoprotein DOC-2 mRNA, complete cds M463 C1 H-U54617 human pyruvate dehydrogenase 45.28 52.0 kDa kinase isoform 4 mRNA 169-38 H-U54645 methylmalonyl-coA mutase 38 25.59 precursor M300 H3 H-U56255 t-complex sterility protein 12.54 16 homolog CW-1 C4 H-U56417 Human lysophosphatidic acid 31.24 46 acyltransferase-alpha mRNA, complete cds M305 A2 H-U56637 actin-capping protein alpha 31.57 31 subunit isoform 1 M235 E6 H-U56814 Human DNase1-Like III protein 33.66 40.0 kDa (DNAS1L3) mRNA, complete cds, involved in apoptosis Binds specifically to G-ACTIN AND BLOCKS ACTIN POLYMERIZATION. D5 H-U57059 31.02 36 B3 H-U57093 Human small GTP-binding 24.09 34 protein rab27b mRNA, complete cds D3 H-U57099 Human APEG-1 mRNA, 12.54 20 complete cds F1 H-U58331 Sarcoglycan, delta (35 kD 28.27 24 dystrophin-associated glycoprotein) M512 F4 H-U58334 Human Bc12, p53 binding protein 110.66 108.0 kDa Bbp/53BP2 (BBP/53BP2) mRNA, complete cds B3 H-U58516 Human breast epithelial antigen 42.68 50 BA46 mRNA, complete cds M250 E4 H-U58522 Human huntingtin interacting 22.11 30 protein (HIP2) mRNA, complete cds M419 G2 H-U60207 human stress responsive 53.640 63.0 kDa serine/threonine protein kinase Krs-2 mRNA M298 B2 H-U60276 arsA homolog (hASNA-I) 36.63 47.0 kDa B2 H-U60521 Human protease proMch6 (Mch6) 45.87 52 mRNA, complete cds F3 H-U61166 Human SH3 domain-containing 57.31 57 protein SH3P17 mRNA, complete cds M250 B5 H-U61232 cofactor E (tubulin-folding protein), REQUIRED FOR VIABILITY IN THE ABSENCE OF THE KINESIN-RELATED CIN8 A5 H-U62392 Homo sapiens zinc finger protein 43.45 52 mRNA, complete cds G1 H-U62801 Human protease M mRNA, 26.95 33 complete cds M266 B1 H-U62962 Int-6, Human Int-6 mRNA, 49.06 52.0 kDa complete cds M300 G1 H-U63295 seven in absentia homolog 31.13 36 M306 H3 H-U64198 94.93 98 H3 H-U64863 Human hPD-1 (hPD-1) mRNA, 31.79 37 complete cds B3 H-U65581 Human ribosomal protein L3-like 44.88 52 mRNA, complete cds M341 D1 H-U65918 DAZ homologue [DAZLA] 32.56 36.0 kDa M302 E1 H-U65928 Jun activation domain binding 36.85 48.0 kDa protein M512 D3 H-U66347 Homo sapiens cAMP 46.97 60.0 kDa phosphodiesterase (PDE4C) mRNA, 4C-426 isoform, complete cds M306 F3 H-U66867 ubiquitin-conjugating enzyme E2I 17.49 28 [UBE2I] M416 E2 H-U68111 Human protein phosphatase 22.66 37.0 kDa inhibitor 2 (PPP1R2) gene F2 H-U68382 Mannosidase, alpha B, lysosomal 35.64 36 G2 H-U69141 Glutaryl-Coenzyme A 48.29 56 dehydrogenase B2 H-U70660 Human copper transport protein 7.59 16 HAH1 (HAH1) mRNA, complete cds M297 B2 H-U71374 peroxisomal membrane protein 40.15 40.0 kDa (Pex13p) M306 A3 H-U75272 progastricsin [PGC] 42.79 49.0 kDa A2 H-U75285 Homo sapiens apoptosis inhibitor 15.73 25 survivin gene, complete cds B2 H-U77456 Human nucleosome assembly 41.36 50 protein 2 mRNA, complete cds C2 H-U78294 Homo sapiens 15S-lipoxygenase 74.47 74 mRNA, complete cds

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INVENTOR-INFORMATION:

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Boulikas, Teni	Mountain View	CA	US	

US-CL-CURRENT: 424/450; 264/4, 435/320.1, 435/458, 514/44

ABSTRACT:

A method is disclosed for encapsulating plasmids, oligonucleotides or negatively-charged drugs into liposomes having a different lipid composition between their inner and outer membrane bilayers and able to reach primary tumors and their metastases after intravenous injection to animals and humans. The formulation method includes complex formation between DNA with cationic lipid molecules and fusogenic-NLS peptide conjugates composed of a hydrophobic chain of about 10-20 amino acids and also containing four or more histidine residues or NLS at their one end. The encapsulated molecules display therapeutic efficacy in eradicating a variety of solid human tumors including but not limited to breast carcinoma and prostate carcinoma. Combination of the plasmids, oligonucleotides or negatively-charged drugs with other anti-neoplastic drugs (the positively-charged cis-platin, doxorubicin) encapsulated into liposomes are of therapeutic value. Also of therapeutic value in cancer eradication are combinations of encapsulated the plasmids, oligonucleotides or negatively-charged drugs with HSV-tk plus encapsulated ganciclovir.

L1: Entry 12 of 50

File: PGPB

Apr 17, 2003

DOCUMENT-IDENTIFIER: US 20030072794 A1

TITLE: Encapsulation of plasmid DNA (lipogenes.TM.) and therapeutic agents with nuclear localization signal/fusogenic peptide conjugates into targeted liposome complexes

Detail Description Table CWU (12):

NO:276) 317 EPAPGKKQKKSAD (SEQ ID NO:277) 336 EEEAKPSTETKPAKGR KKAP (SEQ ID NO:278)  
372 KPARGRKKA (SEQ ID NO:279) 394 GSCTTAKKAKAE (SEQ ID NO:280) S. CEREVISIAE 200  
IEKLRRKLYISGG RAD1 ERCC4 1100 aa; 30% sequence (SEQ ID NO:281) (XPF) identity to  
Rad16; RAD1 515 NKKRGVRQVLLN (SEQ Rad16 interacts strongly with ID NO:282) RAD10 565  
KEQVTTKRRRTRG (conserved in Rad16) (SEQ ID NO:283) 1024 NLRKKIKSFNKLQ (SEQ ID  
NO:284) 89 RQRKERRQGKRE RAD2 XPGC 1031 aa, 117.8 kDa; ssDNA (SEQ ID NO:285) Rad13  
endonuclease; rad mutants 907 ENKFEKDLRKLVNNE are defective in incision (SEQ ID  
NO:286) 984 RDVNKRKKKGKQKRI (SEQ ID NO:287) 1017 KRISTATGKLKKRXM (SEQ ID NO:288) 672  
GKDDYGVMLADRRF RAD3 ERCC2 or XPD; 778 aa, 89,779 Da; 30% SRKRSQPL (contains the  
bulky (S. cer) Rad15 or Rhp3 sequence identity to rad16; F) (SEQ ID NO:289)  
ATP-dependent DNA helicase; single-stranded DNA-dependent ATPase. 26  
PLSRRRRVRRKRNQPLPD RAD4 XPC 754 aa; mutations in RAD4 AKKKFKTG (SEQ ID NO:290) that  
that inactivate the 134 NEERKRRKYFHTMLYL excision repair function of (SEQ ID NO:291)  
RAD4 result in truncated 160 EWINSKRLSRKLSNL proteins missing the C- (weak) (SEQ ID  
NO:292) terminal one-third of RAD4. 254 EMSANNKRKFKTLKRSR weak (SEQ ID NO:293) 382  
WMNSKVRKRKRITKDDF GEK (SEQ ID NO:294) 403 RKVITALHHRKRTKID DYED (SEQ ID NO:295) 504  
KTGSRCKVKVIKRTVGRP (SEQ ID NO:296) 150 FHPKRRRIYGFR (SEQ ID NO:297) 1169 aa; helicase  
involved in NO:297) postreplication-repair (RAD6 215 DSRGRKKASM (SEQ ID epistasis  
group); binds DNA NO:298) with the seven helicase 297 DGESLMKRRTEGGNK motifs and  
with zinc fingers; REK (SEQ ID NO:299) increases the instability of 1152  
DEDERRKRRIEE poly (GT) repeats in the yeast (SEQ ID NO:300) genome. 1  
MSTPARRRLMRDFKRM RAD6 RAD6 mediates the KEDAPP (SEQ ID NO:301) ubiquitination of H2A  
and H2B histones 15 GVAKLKEKSGAD RAD10 ERCC1 210 aa; forms an (SEQ ID NO:302)  
endonuclease with RAD1; 76 DDYNRKRPFSTRPGK the basic and tyrosine-rich (SEQ ID  
NO:303) central domain was suggested to bind DNA by ionic interactions and tyrosine  
intercalation. 172 EGKAHRREKKYE RAD14 XPAC 247 aa, 29.3 kDa; two zinc (SEQ ID

NO:304) fingers; involved in lesion 200 NRLREKKHGKAIHH recognition; 27% sequence (SEQ ID NO:305) identity and 54% sequence similarity (if conserved residues are grouped together) to human XPA; deletion of RAD14 gene generates high UV sensitivity. 345 ERRKQLKKQGPKRP Ixr1 591 aa; two consecutive (SEQ ID NO:306) (S. cer) HMG boxes; involved in 479 ETYKKRIKEWESCPDE recognition of 1,2-intrastrand (SEQ ID NO:307) d(GpG) and d(ApG) cisplatin crosslinks. None RAD23 HHR23 483 LTCKKLKTHNRIILSG RAD26 ERCC6 1075 aa; disruption of the weak (SEQ ID NO:308) (yeast CS-B (hum) RAD26 gene gives viable 934 NALRKSRRKIKQYEIGT ERCC6) yeast cells unable to PX.sub.9GEIRKRDP preferentially repair the (SEQ ID NO:309) actively transcribed strands; surprisingly, in contrast to human CS-B cells, disruption of the RAD26 in yeast does not cause sensitivity to UV, Cisplatin, or X-rays. 634 KPTSKPKRVRTATKKKIP MRE11 Rad32 (S. pom) meiotic recombination (SEQ ID NO:310) protein; functions in the 408 FYKKRSPVTRSKKSG same pathway with RAD51 (SEQ ID NO:311) none; RAD51 RecA (E. coli) 402 aa; essential for repair of 361 GFKKGKGQQR DSBs and recombination; (SEQ ID NO:312) associates strongly with RAD52; self associates; neither RAD51 nor RAD52 possess a typical simple NLS. none; RAD51 (K. 364 aa 328 GFKKGKGQQR lactis) (SEQ ID NO:313) none; RAD52 Rad22 504 aa; rad52 mutants are 155 ERAKKSAVTDALKRSLR defective in ionizing GFGX.sub.gDKDFLAKIDKVFKFD- P radiation, mitotic PD (tripartite) recombination, mating-type (SEQ ID NO:314) switching, and repair of DSDs. 1 MARRRLPDRPP RAD54 898 aa; recombination-repair (SEQ ID NO:315) protein; ATP-binding motif; 65 GGRSLRKRSA helicase domains; in the (SEQ ID NO:316) same subfamily of helicases 99 QLTKRRKD with MOT1 and SNF2. (SEQ ID NO:317) 269 DETVFVKSKRVKASSS RAD55 Similarity to RecA, and (extremely weak if at all NLS) lower similarity to RAD51, (SEQ ID NO:318) RAD57, and DMC1 317 GEDRKREGRNLKR (SEQ ID NO:319) 371 PISRQSKKRKFDYRVP RAD57 460 aa; nucleotide-binding (SEQ ID NO:320) domain; limited similarity to RAD51 62 GLKKPRKKTKSSRH SSL2 ERCC3 (XPB) 843 aa; putative helicase that (SEQ ID NO:321) seems to function in repair 688 GRILRAKRRNDEG but also in the removal of (SEQ ID NO:322) secondary structures in the 5' 784 GRGSNGHKRFKS (weak) untranslated region of mRNA (SEQ ID NO:323) to allow ribosome binding and scanning. 50 TRRHLCIHKGLSE (weak) DMC1 RecA 334 aa; yeast homolog of (SEQ ID NO:324) RecA, meiosis-specific; 277 DGRKPIGGHX.sub.12RKGRG dmc 1 mutants are defective DER (bipartite) (SEQ ID in reciprocal recombination NO:325) and accumulate DSBs 11 ETEKRCKQKEQRY PMS 1 904 aa, 103 kDa; mismatch- (SEQ ID NO:326) repair protein; MutL (Salmonella) and HexB (Streptococcus) homolog None HRR25 Hhp1, Hhp1 (S. pom) Mutations in HRR25 Ser/Thr 1 MDLRVGRKFRIGRKIG CR1 (mamm protein kinase cause defects (SEQ ID NO:327) in DNA repair and 139 GRRGX.sub.8GLSKKYRDFNT retardation in cell cycling HRHIP (Bipartite weak NLS) (SEQ ID NO:328) 96 HELTKRSSRRVETEK YKL510 383 aa; structure-specific (SEQ ID NO:329) endonuclease; two domains of about 100 aa with sequence similarity to N- and C-terminal regions of RAD2. 200 MLAMARRKKKMSAK MOT1 Modifier of transcription 1; (SEQ ID NO:330) 1867 aa; DNA helicase of S. 617 EHYKVKHTEK (weak cerevisiae required for NLS) (SEQ ID NO:331) viability; increases gene 670 LHPEKKRSISE (weak expression of several, but NLS) (SEQ ID NO:332) not all, pheromone- responsive genes in the absence of STE12; the 1257 to 1825 aa domain (568 aa residues) has homology to SNF2 and RAD54 S. POMBE 60 SSIDEx.sub.5SIKRKRRI (SEQ ID Swi4 Duc-1 113 kDa; KCII sites are NO:333) Rep-3 upstream of NLS like in SV40 large T; the homologous prokaryotic MutS and HexA lack NLS 96 GELAKRVARHQKARE Rad2 380 aa (weak NLS) (SEQ ID NO:334) 362 GSAKRKDRS (SEQ ID NO:335) 372 KGKESKKR (SEQ ID NO:336) None Rad9 -- 427 aa; no homology to other DNA repair proteins; rad9

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMDC	DraIn Desc	Image
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13. Document ID: US 20030065156 A1

L1: Entry 13 of 50

File: PGPB

Apr 3, 2003

PGPUB-DOCUMENT-NUMBER: 20030065156

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030065156 A1

TITLE: Novel human genes and gene expression products I

PUBLICATION-DATE: April 3, 2003

## INVENTOR-INFORMATION:

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Williams, Lewis T.	Mill Valley	CA	US	
Escobedo, Jaime	Alamo	CA	US	
Innis, Michael A.	Moraga	CA	US	
Garcia, Pablo Dominguez	San Francisco	CA	US	
Sudduth-Klinger, Julie	Kensington	CA	US	
Reinhard, Christoph	Alameda	CA	US	
Giese, Klause	San Francisco	CA	US	
Randazzo, Filippo	Emeryville	CA	US	
Kennedy, Giulia C.	San Francisco	CA	US	
Pot, David	San Francisco	CA	US	
Kassam, Atlaf	Oakland	CA	US	
Lamson, George	Moraga	CA	US	
Drmanac, Radoje	Palo Alto	CA	US	
Crkvenjakov, Radomir	Sunnyvale	CA	US	
Dickson, Mark	Hollister	CA	US	
Drmanac, Snezana	Palo Alto	CA	US	
Labat, Ivan	Sunnyvale	CA	US	
Leshkowitz, Dena	Sunnyvale	CA	US	
Kita, David	Foster City	CA	US	
Garcia, Veronica	Sunnyvale	CA	US	
Jones, Lee William	Sunnyvale	CA	US	
Stache-Crain, Birgit	Sunnyvale	CA	US	

US-CL-CURRENT: 536/23.1; 435/6, 435/7.1

## ABSTRACT:

This invention relates to novel human polynucleotides and variants thereof, their encoded polypeptides and variants thereof, to genes corresponding to these polynucleotides and to proteins expressed by the genes. The invention also relates to diagnostic and therapeutic agents employing such novel human polymucleotides, their corresponding genes or gene products, e.g., these genes and proteins, including probes, antisense constructs, and antibodies.

L1: Entry 13 of 50

File: PGPB

Apr 3, 2003

DOCUMENT-IDENTIFIER: US 20030065156 A1

TITLE: Novel human genes and gene expression products I

Detail Description Table CWU (53):

588 J05109 *T. thermophila* 0.014 <NONE> <NONE> calcium-binding 25 kDa (TCBP 25) protein gene, complete cds. 589 U95098 *Xenopus laevis* 6.00E-04 <NONE> <NONE> <NONE> mitotic phosphoprotein 44 mRNA, partial cds 590 AF060246 *Mus musculus* 1.00E-83 SCRB\_PEDPE SUCROSE-6- 10 strain C57BL/6 PHOSPHATE zinc finger protein HYDROLASE (EC 106 (Zfp 106) 3.2.1.26) (SUCRASE) mRNA, H3a-a allele, complete cds 591 Y11966 *B. aphidiocola* (host 0.37 <NONE> <NONE> <NONE> *T. suberi*) plasmid pBTS1 genes leuA, hspA, repA2, repA1, leuB, leuC, leuD, leuA 592 U20428 Human SNC19 1.00E-64 YY22\_MYCTU HYPOTHETICAL 0.29 mRNA sequence 30.8 KD PROTEIN CY49.22 593 AF043084 *Lycopersicon* 0.37 KNIR\_DROME ZYGOTIC GAP 9.9 esculentum PROTEIN KNIRPS ethylene receptor homolog (ETR1) mRNA, complete cds 594 X65279 pWE15 cosmid 5.00E-66 COA1\_SV40 COAT PROTEIN 0.001 vector DNA VP1 595 U95098 *Xenopus laevis* 0.041 UL88\_HSV7J PROTEIN U59 5.8 mitotic phosphoprotein 44 mRNA, partial cds 596 M91452 *Sus scrofa* 3.2 <NONE> <NONE> ryanodine receptor (RYR1) gene, complete cds. 597 U77327 Human Ki-1/57 e-158 GAT1\_CHICK ERYTHROID 1.2 intracellular TRANSCRIPTION antigen mRNA, FACTOR (GATA-1) partial cds (ERYF1) 598 U77327 Human Ki-1/57 0

RPB7\_ARATH DNA-DIRECTED 6.2 intracellular RNA POLYMERASE antigen mRNA, II 19 KD partial cds POLYPEPTIDE (EC 2.7.7.6) (RNA POLYMERASE II SUBUNIT 5) 599 Y16964 Saccharomyces 0.37 NMDS\_YEAST NONSENSE- 1.9 sp. mitochondrial MEDIATED mRNA DNA for OLI1 DECAY PROTEIN 5 gene, strain CID1 600 U95102 Xenopus laevis 6.00E-06 <NONE> <NONE> mitotic phosphoprotein 90 mRNA, complete cds 601 U95098 Xenopus laevis 8.00E-08 <NONE> <NONE> mitotic phosphoprotein 44 mRNA, partial cds 602 AF091046 Brugia pahangi 1.1 INVO\_PONPY INVOLCRIN 0.23 nuclear hormone receptor (bhr-1) gene, partial cds 603 M87339 Human 0 AC12\_HUMAN ACTIVATOR 1 37 1.00E-38 replication factor KD SUBUNIT C, 37-kDa subunit (REPLICATION mRNA, complete FACTOR C 37 KD cds SUBUNIT) (A1 37 KD SUBUNIT) (RF- C 37 KD SUBUNIT) (RFC37) 604 D28116 Human genes for 0.39 <NONE> <NONE> collagen type IV alpha 5 and 6, exon 1 and exon 1' 605 U95102 Xenopus laevis 2.00E-06 <NONE> <NONE> mitotic phosphoprotein 90 mRNA, complete cds 606 AE001149 Borrelia 0.13 <NONE> <NONE> burgdorferi (section 35 of 70) of the complete genome 607 X14168 Human pLC46 6.00E-16 Z136\_HUMAN ZINC FINGER 0.31 with DNA PROTEIN 136 replication origin 608 Z57610 H. sapiens CpG 7.00E-90 HN3B\_RAT HEPATOCYTE 1.00E-19 DNA, clone NUCLEAR FACTOR 187a10, reverse 3-BETA (HNF-3B) read cpg187a10.rt1a. 609 U95098 Xenopus laevis 0.043 PGCV\_MOUSE VERSICAN CORE 3.5 mitotic PROTEIN phosphoprotein PRECURSOR 44 mRNA, partial (LARGE cds FIBROBLAST PROTEOGLYCAN) (CHONDROITIN SULFATE PROTEOGLYCAN CORE PROTEIN 2) (PG-M) 610 U95094 Xenopus laevis 7.00E-07 CA11\_CHICK PROCOLLAGEN 0.4 XL-INCENP ALPHA 1(I) CHAIN (XL-INCENP) PRECURSOR mRNA, complete cds 611 AB007956 Homo sapiens e-106 RRPB\_CVMA5 RNA-DIRECTED 9.7 mRNA, RNA POLYMERASE chromosome 1 (EC 2.7.7.48) specific transcript (ORF1B) KIAA0487 612 U95102 Xenopus laevis 0.005 <NONE> <NONE> mitotic phosphoprotein 90 mRNA, complete cds 613 U95094 Xenopus laevis 6.00E-05 UL52\_EBV HELICASE/PRIMAS 5.9 XL-INCENP E COMPLEX (XL-INCENP) PROTEIN mRNA, complete (PROBABLE DNA cds REPLICATION PROTEIN BSLF1) 614 U95760 Drosophila 3.00E-71 POLG\_PVYHU GENOME 4.3 melanogaster POLYPYPROTEIN strawberry notch (CONTAINS: N- (sno) mRNA, TERMINAL complete cds PROTEIN; HELPER COMPONENT PROTEINASE (EC 3.4.22.-) (HC-PRO); 42- 50 KD PROTEIN; CYTOPLASMIC INCLUSION PROTEIN (CI); 6 KD PROTEIN; NUCLEAR INCLUSION PROTEIN A (NI-A) (EC 3.4.22.-) (49K PROTEINASE) (49 615 U95102 Xenopus laevis 9.00E-09 VP3\_ROTPO INNER CORE 7.7 mitotic PROTEIN VP3 phosphoprotein 90 mRNA, complete cds 616 J05499 Rattus norvegicus e-143 GLSL\_RAT GLUTAMINASE, 7.00E-67 L-glutamine LIVER ISOFORM amidohydrolase PRECURSOR (EC mRNA, complete 3.5.1.2) (GLS) cds 617 M19262 Rat clathrin light 0.37 Y642\_METJA HYPOTHETICAL 5.8 chain (LCB3) PROTEIN MJ0642 mRNA, complete cds. 618 M21191 Human aldolase 1.00E-32 LIN1\_NYCCO LINE-1 REVERSE 6.00E-17 pseudogene TRANSCRIPTASE mRNA, complete HOMOLOG cds. 619 U95094 Xenopus laevis 1.00E-11 NUCM\_BOVIN NADH- 0.044 XL-INCENP UBIQUINONE (XL-INCENP) OXIDOREDUCTASE mRNA, complete 49KD SUBUNIT (EC cds 1.6.5.3) (EC 1.6.99.3) (COMPLEX I-49KD) (CI-49KD) 620 U95098 Xenopus laevis 0.005 HEMZ\_RHOCA FERROCHELATASE 4.4 mitotic (EC 4.99.1.1) phosphoprotein (PROTOHEME 44 mRNA, partial FERRO-LYASE) cds 621 AF041428 Homo sapiens 0.002 <NONE> <NONE> ribosomal protein s4 X isoform gene, complete cds 622 X07158 Chironomus 0.13 <NONE> <NONE> <NONE> thummi DNA for Cla repetitive element 623 U95094 Xenopus laevis 8.00E-04 <NONE> <NONE> <NONE> XL-INCENP (XL-INCENP) mRNA, complete cds 624 AF100470 Rattus norvegicus 1.00E-53 <NONE> <NONE> <NONE> ribosome attached

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)

[Email](#) | [Print Descr](#) | [Image](#)

14. Document ID: US 20030044957 A1

L1: Entry 14 of 50

File: PGPB

Mar 6, 2003

PGPUB-DOCUMENT-NUMBER: 20030044957

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030044957 A1

TITLE: Zinc finger proteins for DNA binding and gene regulation in plants

PUBLICATION-DATE: March 6, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Jamieson, Andrew	San Francisco	CA	US	
Li, Guofu	Albany	CA	US	

US-CL-CURRENT: 435/219; 435/320.1, 435/419, 435/69.1, 536/23.2, 800/278

ABSTRACT:

Disclosed herein are modified plant zinc finger proteins; compositions comprising modified plant zinc finger proteins and methods of making and using modified plant zinc finger proteins. The modified plant zinc finger proteins, in contrast to naturally-occurring plant zinc finger proteins, have a binding specificity that is determined by tandem arrays of modular zinc finger binding units.

L1: Entry 14 of 50

File: PGPB

Mar 6, 2003

DOCUMENT-IDENTIFIER: US 20030044957 A1

TITLE: Zinc finger proteins for DNA binding and gene regulation in plants

Summary of Invention Paragraph (14):

[0012] In one aspect, disclosed herein is a modified plant zinc finger protein (ZFP) that binds to a target sequence. The target sequence can be, for example, nucleic acid (DNA or RNA) or amino acids of any length, for instance 3 or more contiguous nucleotides. In certain embodiments, the modified plant ZFP comprises a tandem array of zinc fingers. One, more than one or all of the zinc fingers of the ZFP may be naturally occurring or may be obtained by rational design and/or selection (e.g., phage display, interaction trap, ribosome display and RNA-peptide fusion. Thus, in certain embodiments, one or more of the zinc fingers comprise canonical C.sub.2H.sub.2 zinc fingers and in other embodiments, one or more of the zinc fingers comprise non-canonical zinc fingers. In any of the modified plant ZFPs described herein, one or more of the zinc fingers are derived from two or more plant species, for example, by deleting and/or substituting one or more amino acid residues as compared to a naturally occurring plant ZFP. In certain embodiments, one or more amino acid residues are deleted between one or more of the zinc fingers.

Summary of Invention Paragraph (18):

[0016] In another aspect, a method for modulating gene expression in a plant cell comprising contacting the cell with any of the modified plant ZFPs described herein is provided. In one embodiment, the protein comprising a tandem array of zinc fingers is provided. Preferably, the protein is expressed in the cell, for example, by introducing the protein and/or a nucleic acid encoding the protein into the cell. In certain embodiments, the zinc fingers of the protein comprise an adapted amino acid sequence at any one or more of residues -1 through +6 of the recognition helix. The adapted amino acid sequence can be obtained by rational design and/or by selection (e.g., using methods such as phage display, interaction trap, ribosome display, RNA-peptide fusion or combinations of one or more of these methods). In certain embodiments, the protein comprises zinc finger backbones from different species, for example different plant species. In other embodiments, the protein comprises zinc finger backbones of plant origin, fungal origin or combinations thereof.

Detail Description Paragraph (21):

[0042] A "designed" zinc finger protein is a protein not occurring in nature whose structure and composition results principally from rational criteria. Criteria for rational design include application of substitution rules and computerized algorithms for processing information in a database storing information of existing ZFP designs and binding data, for example as described in co-owned PCT WO 00/42219. A "selected" zinc finger protein is a protein not found in nature whose production results primarily from an empirical process such as phage display, two-hybrid systems and/or interaction trap assays. See e.g., U.S. Pat. No. 5,789,538; U.S. Pat. No. 6,007,988; U.S. Pat. No. 6,013,453; WO 95/19431; WO 96/06166; WO 98/54311 and Joung et al. (2000) Proc. Natl. Acad. Sci. USA 97:7382-7387. Selection methods also

include ribosome display systems (e.g., PCT WO 00/27878) and mRNA-peptide fusion systems (e.g., U.S. Pat. No. 6,207,446; PCT WO 00/47775). Amino acid sequences of polypeptides (e.g., zinc fingers) obtained by selection or design are referred to as "adapted" amino acid sequences. Designed and/or selected ZFPs are modified according to the methods and compositions disclosed herein and may also be referred to as "engineered" ZFPs.

## CLAIMS:

8. The modified plant zinc finger protein of claim 7, wherein selection is phage display, interaction trap, ribosome display and RNA-peptide fusion.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#) | [KIND](#) | [Drawn Desc](#) | [Image](#)

15. Document ID: US 20030044783 A1

L1: Entry 15 of 50

File: PGPB

Mar 6, 2003

PGPUB-DOCUMENT-NUMBER: 20030044783

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030044783 A1

TITLE: Human genes and gene expression products

PUBLICATION-DATE: March 6, 2003

INVENTOR-INFORMATION:

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Garcia, Pablo Dominguez	Kensington	CA	US	
Sudduth-Klinger, Julie	Alameda	CA	US	
Reinhard, Christoph	Oakland	CA	US	
Randazzo, Filippo	San Francisco	CA	US	
Kennedy, Giulia C.	Arlington	VA	US	
Pot, David	Oakland	CA	US	
Kassam, Altaf	Moraga	CA	US	
Lamson, George	Palo Alto	CA	US	
Drmanac, Radjoe	Hollister	CA	US	
Dickson, Mark	Mountain View	CA	US	
Labat, Ivan	Sunnyvale	CA	US	
Jones, Lee William	Sunnyvale	CA	US	
Stache-Crain, Birgit			US	

US-CL-CURRENT: 435/6; 435/183, 435/320.1, 435/325, 435/69.1, 530/350, 530/388.1,  
536/23.2

ABSTRACT:

This invention relates to novel human polynucleotides and variants thereof, their encoded polypeptides and variants thereof, to genes corresponding to these polynucleotides and to proteins expressed by the genes. The invention also relates to diagnostic and therapeutic agents employing such novel human polynucleotides, their corresponding genes or gene products, e.g., these genes and proteins,

including probes, antisense constructs, and antibodies.  
L1: Entry 15 of 50 File: PGPB

File: PGPB

Mar 6, 2003

DOCUMENT-IDENTIFIER: US 20030044783 A1  
TITLE: Human genes and gene expression products

Detail Description Table CWU (53) :

Detail Description table CWS (35)

1862 854065 (X83413) U88 [Human herpesvirus 6] 2e-006 1863 1707274 (U80931) strong similarity to class-III of pyridoxal-phosphate- dependent aminotransferases

1871 4049828 (AF063866) ORF MSV145 hypothetical protein [Melanoplus 5.6 sanguinipes entomopoxvirus] 1872 1109853 (U41538) weak similarity to the S. cerevisiae activator 1 05 KD 4.5 subunit (replication factor C 95 KD subunit) 1873 113668 !!!! ALU CLASS C WARNING ENTRY !!!! 3.6 1874 1684995 (U20663) NADH dehydrogenase subunit [Encyclia tampensis] 1.6 1875 3599325 (AF081106) ORF1 [Mus musculus domesticus] 0.36 1876 160379 (M63274) malaria antigen [Plasmodium falciparum] 0.16 1877 728837 !!!! ALU SUBFAMILY SQ WARNING ENTRY 0.12 1878 2134199 myosin I beta - bullfrog

>gi.vertline.602138 (U14549) myosin I beta [Rana 0.036 catesbeiana]

>gi.vertline.603692 (U14382) myosin I beta [Rana catesbeiana] 1879 1872200 (U22376) alternatively spliced product using exon 13A 0.009 1880 1938524 (U97012) contains similarity to a ground domain, also weakly similar 0.17 to drosophila fork head domain transcription factor SLP1 (SP:P32030) [Caenorhabditis elegans] 1882 3510507 (AF032382) metalloprotease-disintegrin [Xenopus laevis] 0.77 1883 728837 !!!! ALU SUBFAMILY SQ WARNING ENTRY 0.33 1884 854065 (X83413) U88 [Human herpesvirus 6]

SERINE/THREONINE PROTEIN PHOSPHATASE 7.2 C27B7.6 IN CHROMOSOME IV serine/threonine protein phosphatase [Caenorhabditis elegans] 1888 728837 !!!! ALU SUBFAMILY SQ WARNING ENTRY 7e-009 1890 435942 (U04295) DNA-binding factor of bZIP class [Oryza sativa] 1 1891 728832 !!!! ALU SUBFAMILY SB WARNING ENTRY 0.94 1892 3599347 (AF081114) ORF2 [Mus musculus domesticus] 0.55 1893 728837 !!!! ALU SUBFAMILY SQ WARNING ENTRY 0.056 1894 1196432 (M22333) unknown protein [Homo sapiens] 0.002 1895 728838 !!!! ALU SUBFAMILY SX WARNING ENTRY 0.004 1901 728831 !!!! ALU SUBFAMILY J WARNING ENTRY 8 1902 3646450 (AL031603) conserved hypothetical protein. 7e-028 1903 2213560 (Z97052) hypothetical protein 5e-026 1905 3002527 (AF010144) neuronal thread protein AD7c-NTP [Homo sapiens] 0.066 1906 2072977 (U93574) putative p150 [Homo sapiens] 0.022 1907 728835 !!! ALU SUBFAMILY SC WARNING ENTRY 0.019 1908 4153886 (AB013357) 49 kDa zinc finger protein [Mus musculus] 2e-005 1910 2072974 (U93573) p40 [Homo sapiens] 2 1911 728837 !!!! ALU SUBFAMILY SQ WARNING ENTRY 0.011 1914 4572297 (AF071799) T-cell surface glycoprotein CD4 precursor 6 1915 1350904 RIBOSOME RECYCLING FACTOR (RIBOSOME RELEASING 3.7 FACTOR) (RRF)

>gi.vertline.1361841.vertline.pir.vertline..vertline.A64248 ribosome releasing factor Mycoplasma genitalium (SGC3) releasing factor (frf) [Mycoplasma 1916 728831 !!! ALU SUBFAMILY J WARNING ENTRY 1.4 1917 728832 !!!! ALU SUBFAMILY SB WARNING ENTRY 0.0006 1918 126296 LINE-1 REVERSE TRANSCRIPTASE HOMOLOG protein 4e-005 [Nycticebus coucang] 1919 1791243 (U83119) ORF2 consensus sequence encoding endonuclease and 4e-009 reverse transcriptase minus RNaseH [Rattus norvegicus] 1920 126295 LINE-1 REVERSE TRANSCRIPTASE HOMOLOG 0.006 1921 348317 ATPase 6 - Sauroleishmania tarentolae 7.7 1923 1723547 HYPOTHETICAL 61.8 KD PROTEIN C12B10.03 IN 8.6 CHROMOSOME I>gi.vertline.1262416.vertline.emb.vertline-.CAA94693.vertline. 1924 1177607 (X92485) pval [Plasmodium vivax] 4.9 1925 3068583 (AF000580) Rep-like [Dictyostelium discoideum] 2.4 1926 2120082 hypothetical protein II (retroposon LINE-1) 0.21 1927 1335198 (X03145) pot. ORF III [Homo sapiens] 0.0003 1930 2134328 ECH - chicken >gi.vertline.1037160.vertline.dbj .vertline.BAA08364.vertline. 8.3 1931 4502377 B-cell growth factor 1 (12 KD) 0.094 1932 3417289 (U95740) Unknown gene product [Homo sapiens] 0.065 1933 565080 (U14550) SThM [Homo sapiens] 0.006 1934 728831 !!!! ALU SUBFAMILY J WARNING ENTRY 7e-006 1935 3649741 (AJ000281) mucin [Homo sapiens] 5e-020 1936 3551821 (AF058803) mucin 4 [Homo sapiens] 8e-021 1937 4519443 (AB017430) kinesin-like DNA binding protein [Homo sapiens] 3e-029 1939 1710216 (U79260) unknown [Homo sapiens] 1e-005 1940 728837 !!!! ALU SUBFAMILY SQ WARNING ENTRY 5e-008 1942 4494012 (AL034559) predicted using hexExon; MAL3P7.32 (PFC1010w), 4.5 Hypothetical protein, len: 1322 aa 1943 220578 (D00570) open reading frame (251 AA) [Mus musculus] 0.077 1944 2731377 (U28739) similar to alcohol dehydrogenase/ribitol dehydrogenase 1e-028 [Caenorhabditis elegans] 1945 4587207 (AB020527) Na/PO4 cotransporter homolog 4e-034 1948 728832 !!!! ALU SUBFAMILY SB

WARNING ENTRY 0.21 1949 929913 (V01442) ribosomal protein S8 [Xenopus laevis] 0.066  
 1950 728831 !!!! ALU SUBFAMILY J WARNING ENTRY 2e-006 1951 1125754 (U42833) coded  
 for by C. elegans cDNA cm16f6; coded for by C. 1e-028 elegans cDNA CEESU63F; similar  
 to S. cerevisiae SOF1 protein (SP:P33750) [Caenorhabditis elegans] 1952 4587207  
 (AB020527) Na/PO4 cotransporter homolog 6e-047 1953 4587207 (AB020527) Na/PO4  
 cotransporter homolog 2e-051 1955 2981631 (AB012223) ORF2 [Canis familiaris] 0.027  
 1956 4138064 (Y18301) reverse transcriptase [Ovine pulmonary adenocarcinoma 0.0002  
 1961 4507991 zinc finger protein 140 (clone pHZ-39) 8.6  
 >gi.vertline.1731416.vertline.- sp.vertline.P52738.vertline.Z140\_HUMAN\_ZINC\_FINGER  
 PROTEIN 140 >gi.vertline.2136409.vertline.pir.vertline..vertline.C57785 zinc finger  
 protein ZNF140 - human >gi.vertline.487787 (U09368) zinc finger protein ZNF140 [Homo  
 sapiens] 1962 1711541 SERINE/THREONINE PROTEIN KINASE SSK2 (SUPPRESSOR 5.9 OF SENSOR  
 KINASE 2) SSK2 gene product [Saccharomyces 1963 3236252 (AC004684) CER1-like protein  
 [Arabidopsis thaliana] 3 1964 728836 !!!! ALU SUBFAMILY SP WARNING ENTRY 0.001 1965  
 4138070 (Y18303) reverse transcriptase [Ovine pulmonary adenocarcinoma 0.0002 1966  
 114128 ADP-RIBOSYLATION FACTOR 6 1-175) [Gallus gallus] 9e-011 1967 2293566  
 (AF012896) ADP-ribosylation factor 1 [Oryza sativa] 2e-012 1969 728831 !!!! ALU  
 SUBFAMILY J WARNING ENTRY 0.091 1970 59977 (Z14310) tripartite fusion transcript  
 PLA2L 2e-005 1971 126296 LINE-1 REVERSE TRANSCRIPTASE HOMOLOG protein 9 [Nycticebus  
 coucang] 1972 4155181 (AE001495) putative TYPE II RESTRICTION ENZYME 4.8 1973  
 2239204 (Z97209) vacuolar carboxypeptidase 0.008 1974 3342107 (AF075269) nef protein  
 [Simian immunodeficiency virus] 6.9 1978 423149 X-linked retinopathy protein  
 (C-terminal, clone

Detail Description Table CWU (71):

end. 0.13 1288 X96616 P. primaurelia gene encoding 156D surface antigen 0.13 1289  
 Z33222 M. capricolum DNA for CONTIG MC303 0.12 1290 X52626 Phaseolus vulgaris gene  
 for alpha-phaseolin 0.12 1291 L32699 Paracentrotus lividus glutamine synthetase (Gs)  
 mRNA, 0.12 1292 M63669 Dog arginine esterase gene, complete cds. 0.12 1293 X75653 A.  
 longa plastid genes for ribosomal proteins and tRNAs 0.12 1294 Z11839 T. maritima  
 nusG gene and genes for ribosomal proteins 0.12 1295 AB005744 Perilla frutescens DNA  
 for 1-limonene synthase, complete 0.12 1296 X84904 Plasmodium falciparum encoding  
 Pfg27/25 0.12 1297 L02074 Drosophila melanogaster ribosomal protein S6 gene and two  
 0.12 potential alternatively spliced proteins, complete cds 1298 Z84812 Human DNA  
 sequence from phage pTEL from a contig from 0.12 the tip of the short arm of  
 chromosome 16, spanning 2 Mb of 16p13.13 Contains ESTs 1299 X95276 P. falciparum  
 complete gene map of plastid-like DNA 0.12 1300 NM\_001432.1 Homo sapiens epiregulin  
 (EREGL) mRNA > :: 0.12 dbj.vertline.D30783.vertline.D30783 Homo sapiens mRNA for  
 epiregulin, 1301 X84726 M. musculus neurocan gene 0.12 1302 Z35810 S. cerevisiae  
 chromosome II reading frame ORF YBL049w 0.12 1303 L01655 Plasmodium falciparum  
 T9/106 triosephosphate isomerase 0.12 1304 U36796 Mus musculus presynaptic protein  
 SNAP-25 (Snap-25) gene, 0.12 1305 U22361 Saccharomyces cerevisiae Rlr1p (RLR1) gene,  
 complete cds. 0.12 1306 L04161 Plasmodium falciparum (clone Pfg377 [PfsXLX]) DNA  
 0.12 sequence, complete cds 1307 U32768 Haemophilus influenzae Rd section 83 of 163  
 of the 0.12 1308 D28808 Mycoplasma capricolum mt1A and gyrB genes for DNA 0.12  
 gyrase subunit B and mannitol-specific phosphotransferase 1309 L05920 Human  
 constitutively expressed serum amyloid A protein 0.12 (SAA4) gene, exons 1 through  
 4. 1310 M96642 Paramecium tetraurelia P126 repetitive element. 0.12 1311 L81724 Homo  
 sapiens (subclone 2\_a3 from P1 H69) DNA sequence 0.12 1312 AF010331 Tenebrio molitor  
 thermal hysteresis protein isoform YL-3 0.12 precursor, mRNA, complete cds 1313  
 U74496 Human chromosome 4q35 subtelomeric sequence 0.12 1314 U17295 Haemophilus  
 influenzae dppB, dppC, dppD, dppF, isn, artP 0.12 artI/J, artQ, and artM genes,  
 complete cds, and opa gene, 1315 X53921 A. thaliana T-DNA insertion genomic target  
 sequence 621- 0.12 1316 X75653 A. longa plastid genes for ribosomal proteins and  
 tRNAs 0.12 1317 U09347 Human variant urokinase plasminogen activator receptor 0.12  
 (uPAR2) mRNA, partial cds. 1318 S83182 hyaluronan-binding protein = hepatocyte  
 growth factor 0.12 activator homolog [human, plasma, mRNA, 2408 nt] 1319 U21164  
 Human dopamine D5 receptor gene, 5' flanking and 0.12 1320 AF022391 Feline  
 herpesvirus 1 immediate early protein, glycoprotein 0.12 gL, and uracil DNA  
 glycosylase genes, complete cds 1321 M74569 Clostridium acetobutylicum heat shock  
 protein 0.12 1322 X15359 Drosophila virilis hunchback (hb) gene for zinc-finger 0.12  
 protein transcription factor 1323 U67478 Methanococcus jannaschii section 20 of 150  
 of the complete 0.12 1324 X77052 Entomopoxvirus gene for spherulin 0.12 1325 M97514  
 Saccharomyces douglasii mitochondrial cytochrome c 0.12 oxidase subunit I (COXI)  
 gene, complete cds 1326 X56495 H. sapiens DNA for the upstream regulatory region of

the c- 0.12 erbB2 gene 1327 D61398 Human MSH3 gene, exon3 0.12 1328 Z81595  
Caenorhabditis elegans cosmid T22H2, complete sequence 0.12 [Caenorhabditis elegans]  
1329 D61398 Human MSH3 gene, exon3 0.12 1330 Z79998 Human DNA sequence from cosmid  
B5E3 on chromosome 0.12 22 Contains CpG island, EST 1331 NM\_001280.1 Homo sapiens  
cold inducible RNA-binding protein (CIRBP) 0.12 mRNA > ::  
dbj.vertline.D78134.vertline.HUMCIRPA Homo sapiens mRNA 1332 Z49867 Caenorhabditis  
elegans cosmid C33D3, complete sequence 0.12 [Caenorhabditis elegans] 1333 X14036  
Tomato cab-7 gene for type II chlorophyll a/b-bin 0.12 1334 AF012899 Sambucus nigra  
ribosome inactivating protein precursor 0.12 mRNA, complete cds 1335 U19159 Human P  
protein (P) gene, exon 8 0.12 1336 X74987 H. sapiens mRNA for 2'-5' oligoadenylate  
binding protein > 0.12 :: gb.vertline.L24115.vertline.HUMAAZ Human DNA fragment. >  
:: emb.vertline.A49723.1.vertline.A49723 Sequence 2 from Patent 1337 U32112  
Dictyostelium discoideum 34 kDa actin binding protein 0.12 gene, complete cds > ::  
emb.vertline.Z50156.vertline.DD30KDABP D. discoideum gene for 34 kDa actin binding  
protein 1338 M55002 Synechococcus sp. 6-phosphogluconate dehydrogenase 0.12 gene,  
complete cds. 1339 AF019225 Homo sapiens apolipoprotein L mRNA, complete cds 0.12  
1340 U14190 Mycobacterium smegmatis diphtheria toxin repressor 0.12 homolog (dtxR)  
gene, complete cds. 1341 J05276 Rat 5-hydroxytryptamine-1a receptor (5-HT-1a) gene,  
0.12 1342 AE000603.1 Helicobacter pylori 26695 section 81 of 134 of the complete 0.12  
1343 X15308 H. sapiens NF-H gene, exon 3 0.12 1344 L35600 Homo sapiens DNA sequence.  
0.12 1345 Z73360 Human DNA sequence from cosmid 92M18, BRCA2 gene 0.12 region  
chromosome 13q12-13 1346 U93721 Homo sapiens green cone photoreceptor pigment gene,  
5' 0.12 flanking region 1347 X78401 Bacteriophage P22 tight operon, orf 48,  
replication genes 18 0.12 and 12, nin region genes, ning phosphatase, late control  
gene 23, orf 60, complete cds, late control region, start of 1348 Z71367 S.  
cerevisiae chromosome XIV reading frame ORF 0.12 1349 U43673 Mus musculus putative  
transmembrane receptor IL-1Rrp 0.12 mRNA, complete cds > ::  
gb.vertline.AR016448.vertline.AR016448 Sequence 3 from U.S. Pat. No. 5776731 1350  
X72863 A. thaliana TMKL1 mRNA 0.12 1351 U13769 Vibrio sp. ppGpp synthetase I (relA)  
gene, complete cds. 0.12 1352 M32732 Chicken progesterone receptor gene, encoding  
forms A and 0.11 1353 X04668 Xenopus laevis XK81A1 keratin gene > ::  
emb.vertline.X04804.vertline.XLXX81A1 Xenopus laevis DNA for stage- specific  
epidermal type I keratin A1 (embryo- and larval- 1354 Z82197 Human DNA sequence from  
PAC 293L6 on chromosome 0.11 22, complete sequence [Homo sapiens] 1355 M84214  
Cucumis sativus ORF 1, chitinase, and ORF 3 genes, 0.11 complete cds > ::  
gb.vertline.I38466.vertline.I38466 Sequence 36 from U.S Pat. No. 5614395 > ::  
gb.vertline.I56941.vertline.I56941 Sequence 36 from U.S. Pat. No. 5650505 > ::  
gb.vertline.I59807.vertline.I59807 Sequence 36 from U.S. Pat. No. 5654414 > ::  
gb.vertline.I75134.vertline.I7513 1356 Y08503 F. domesticus mitochondrial 12S rRNA  
gene 0.11 1357 L03286 Hamster P-glycoprotein class I (pgp1) gene exons 1-2. 0.11  
1358 X57171 D. caryophyllus CARSR12 gene 0.11 1359 L07307 Mus musculus ATPase  
mRNA-ampifying genomic DNA 0.11 MOR6.5 sequence. > ::  
gb.vertline.S55685.vertline.S55685 MOR6.5 = ouabain resistance gene {repeat  
sequence} [mice, 1360 Z22175 Caenorhabditis elegans cosmid K01F9, complete sequence  
0.1 [Caenorhabditis elegans] 1361 Z11839 T. maritima nusG gene and genes for  
ribosomal proteins 0.1 1362 L36857 Pisum sativum GTP-binding protein (IAP86) mRNA,  
0.096 1363 AF000994 Homo sapiens ubiquitous TPR motif, Y isoform 0.07 1364 U61950  
Caenorhabditis elegans cosmid C45E5 0.069 1365 U32446 Mus musculus putative  
breast/ovarian cancer susceptibility 0.068 protein homolog (Brca1) mRNA, complete  
cds. 1366 AB001914 Homo sapiens PACE4 gene, exon 23-25, complete cds 0.068 1367  
L20934 Anopheles gambiae complete mitochondrial genome 0.066 1368 AJ001700 Mus  
musculus mRNA for neuroserpin 0.065 1369 AJ001700 Mus musculus mRNA for neuroserpin  
0.065 1370 AF106932 Drosophila melanogaster plexin A (plexA) mRNA, complete 0.065  
1371 D82813 Populus tremuloides cyp73b gene for cinnamic acid 4- 0.065  
hydroxylase, partial cds 1372 V01087 Hemagglutinin gene of influenza virus strain  
0.065 1373 AE001178 Borrelia burgdorferi (section 64 of 70) of the complete 0.064  
1374 X80199 H. sapiens MLN51 mRNA 0.064 1375 AF042384 Homo sapiens BC-2 protein  
mRNA, complete cds 0.064 1376 AJ223485 Enoplateuthis higginsi mitochondrial 16S rRNA  
0.063 1377 AF086094 Homo sapiens full length insert cDNA clone YZ87H06 0.061 1378  
AF017027 African swine fever virus lectin homolog (8CR) gene, 0.061 1379 U56084  
Bordetella bronchiseptica electron transfer flavoprotein 0.06 alpha subunit (etfa)  
gene, partial cds, and exogenous ferric siderophore receptor (bfra) gene, complete  
cds 1380 M33387 Human debrisoquine 4-hydroxylase (CYP2D8P) and 0.057 1381 M25315  
Homo sapiens (clone pAT 464) potential 0.057 lymphokine/cytokine mRNA, complete cds.  
1382 AB011121 Homo sapiens mRNA for KIAA0549 protein, partial cds 0.055 1383

NM\_002647.1 Homo sapiens phosphatidylinositol 3-kinase, class 3 0.051 (PIK3C3) mRNA  
> :: emb.vertline.Z46973.vertline.HSPITR1 H. sapiens mRNA for phosphatidylinositol  
3-kinase 1384 Z18274 Homo sapiens satellite DNA 0.05

Detail Description Table CWU (76):

1787 Z16794 H. sapiens (D4S409) DNA segment containing (CA) repeat; 6e-006 clone AFM183xd6; single read 1788 D83737 Human coagulation factor XII gene, intron 2 6e-006 1789 X04871 Paramecium primaurelia macronuclear DNA telomeric 6e-006 1790 M14292 Human L1Heg repetitive element from the intergenic region 6e-006 of the epsilon and G-gamma globin genes. 1791 NM\_003734.1 Homo sapiens amine oxidase, copper containing 3 6e-006 gb.vertline.U39447.vertline.HSU39447 Human placenta copper monamine oxidase mRNA, complete cds 1792 M27147 Human alpha-2-plasmin inhibitor, allele A, 5' end. 6e-006 1793 X86012 Human DNA sequence from intron 22 of the factor VIII 6e-006 gene, Xq28. Contains the end of a 9.5 kb repeated region, int22h-1, involved in many cases of haemophilia 1794 M33216 Human aortic-type smooth muscle alpha-actin 3e-006 1795 Z83334 H. sapiens RPS3a gene 2e-006 1796 M57682 Rat brain calcium channel alpha-1 subunit mRNA, complete 2e-006 1797 M19817 Human apolipoprotein B-100 (apoB) gene, intron J. 2e-006 1798 Z24068 H. sapiens (D22S427) DNA segment containing 2e-006 1799 Z50155 X. laevis mRNA for insulin-like growth factor I receptor 2e-006 1800 Y12839 H. sapiens BH30 mRNA 2e-006 1801 Z70041 Human DNA sequence from cosmid U39H5, between 2e-006 markers DXS6791 and DXS8038 on chromosome X 1802 Z80128 H. sapiens CACNL1A4 gene, exons 16 and 17 2e-006 1803 U80893 Mus musculus CAG trinucleotide repeat mRNA, partial 2e-006 1804 Z63192 H. sapiens CpG island DNA genomic Mse1 fragment, clone 2e-006 7a7, forward read cpg7a7.ft1d 1805 U72964 Human hepatocyte nuclear factor 4-alpha gene, exon 5 2e-006 1806 AC002183 Homo sapiens (subclone 2\_h8 from BAC H111) DNA 2e-006 1807 S73557 annexin II = 36 kDa calcium-dependent phospholipid-binding 2e-006 protein [rats, RBL-2H3 basophilic leukemia cells, mRNA, 1808 U79258 Human clone 23732 mRNA, partial cds 8e-007 1809 Z62146 H. sapiens CpG island DNA genomic Mse1 fragment, clone 8e-007 64b2, forward read cpg64b2.ft1a 1810 U44381 Human tissue inhibitor of metalloproteinases-2 8e-007 1811 Z65575 H. sapiens CpG island DNA genomic Mse1 fragment; clone 7e-007 47c5, reverse read cpg47c5.rt1a 1812 J03764 Human, plasminogen activator inhibitor-1 gene, exons 2 to 7e-007 1813 X75349 H. sapiens 5' flanking DNA for clotting factor IX 7e-007 1814 Z73360 Human DNA sequence from cosmid 92M18, BRCA2 gene 7e-007 region chromosome 13q12-13 1815 Z73360 Human DNA sequence from cosmid 92M18, BRCA2 gene 7e-007 region chromosome 13q12-13 1816 X77624 H. sapiens simple sequence clone pg2m3, 5' flank and repeats 7e-007 1817 S46857 SCL/TCL5/tal-1 = stem-cell leukemia {germline chromosome 3 translocation/deletion breakpoint} [human, bone marrow cells, Genomic Mutant, 239 nt] 1818 J03998 P. falciparum glutamic acid-rich protein gnen, complete cds. 7e-007 1819 AF012899 Sambucus nigra ribosome inactivating protein precursor 3e-007 mRNA, complete cds 1820 U47654 Human pyruvate kinase PK-R gene, partial cds, and pyruvate 3e-007 kinase PK-L gene, complete cds. 1821 U78096 Human macrophage colony stimulating factor receptor (c- 3e-007 fms) gene, exon 1A, 2 and partial cds 1822 L76927 Human galactokinase (GALK1) gene, complete cds 3e-007 1823 U22086 Ursus americanus clone G10H GT and ATTT microsatellite 3e-007 1824 J03069 Human MYCL2 gene, complete cds. 3e-007 1825 X82640 D. melanogaster mRNA for alpha 1,2 mannosidase 3e-007 1826 U18671 Human Stat2 gene, complete cds. 2e-007 1827 L02935 Human major breakpoint cluster region (BCR) gene, exons 1- 2e-007 3 and repeat regions. 1828 L04193 Human lens membrane protein (mp19) gene, exon 11. 2e-007 1829 AC001050 Homo sapiens (subclone 3\_e9 from P1 H55) DNA sequence 2e-007 1830 AF012899 Sambucus nigra ribosome inactivating protein precursor 2e-007 mRNA, complete cds 1831 AF012899 Sambucus nigra ribosome inactivating protein precursor 9e-008 mRNA, complete cds 1832 L78776 Homo sapiens (subclone 2\_a7 from P1 H49) DNA sequence 9e-008 1833 U41315 Human ring zinc-finger protein (ZNF127-Xp) gene and 5' 9e-008 flanking sequence. 1834 X95586 H. sapiens MB1 gene 9e-008 1835 M33387 Human debrisoquine 4-hydroxylase (CYP2D8P) and 9e-008 1836 U09954 Human ribosomal protein L9 gene, 5' region and complete 8e-008 1837 Z15030 H. sapiens gene for ventricular myosin light chain 2 > :: 8e-008 gb.vertline.L01652.vertline.HUMVMLC Human ventricular myosin light chain 2 gene, seven exons. 1838 AF012899 Sambucus nigra ribosome inactivating protein precursor 8e-008 mRNA, complete cds 1839 AF012899 Sambucus nigra ribosome inactivating protein precursor 8e-008 mRNA, complete cds 1840 Z77974 H. sapiens flow-sorted chromosome 6 HindIII fragment, 8e-008 1841 AF012899 Sambucus nigra ribosome inactivating protein precursor 8e-008 mRNA, complete cds 1842 L81802 Homo sapiens (subclone 1\_c12 from P1 H31) DNA 8e-008 1843 D87001 Human (lambda) DNA for immunoglobulin light chain 8e-008

1844 Z23971 H. sapiens (D2S338) DNA segment containing (CA) repeat; 8e-008 clone AFM276zf5; single read 1845 X89398 H. sapiens ung gene for uracil DNA-glycosylase 3e-008 1846 Z68212 Phocine Herpesvirus 1 DNA (clone 4; 280 bp) 3e-008 1847 M85145 Human tumor necrosis factor receptor, 3' flank. 3e-008 1848 M17919 Human DNA with homology to EBV IR3 repeat, clone Hu3. 3e-008 1849 M21339 Human non-histone chromosomal protein HMG-14 gene, 3e-008 complete cds. 1850 Z69655 Human DNA sequence from cosmid L98A6, Huntington's 3e-008 Disease Region, chromosome 4p16.3 1851 S83526 red photopigment gene {Alu repeat region, long intron 1} [human, peripheral blood leucocytes, Genomic, 1987 net] 1852 M11809 Human (2'-5') oligo A synthetase E gene, exon 7 and flanks. 3e-008 1853 X94768 H. sapiens RP3 gene (XLRP gene 3) 3e-008 1854 X62025 H. sapiens rod cG-PDE G gene for 3',5'-cyclic nucleotide 3e-008 phosphodiesterase 1855 NM\_000694.1 Homo sapiens aldehyde dehydrogenase 7 (ALDH7) mRNA 3e-008 > :: gb.vertline.U10868.vertline.HSU10868 Human aldehyde dehydrogenase ALDH7 mRNA, complete cds. 1856 U22086 Ursus americanus clone G10H GT and ATTT microsatellite 3e-008 1857 AC001174 Homo sapiens (subclone 1\_e2 from BAC H94) DNA 3e-008 1858 X69908 H. sapiens gene for mitochondrial ATP synthase c subunit 2e-008 1859 X91233 H. sapiens IL15 gene 2e-008 1860 M61835 Human lactase phlorizin hydrolase (LCT) gene, exon 2. 1e-008 1861 M29324 Mouse L1Md-A13 repetitive sequence. 1e-008 1862 AF021806 Rattus norvegicus connexin 40 (GJA5) mRNA, complete cds 1e-008 1863 AB002584 Rattus norvegicus mRNA for beta-alanine-pyruvate 1e-008 aminotransferase, complete cds 1864 Z54147 Human DNA sequence from cosmid L129H7, Huntington's 9e-009 Disease Region, chromosome 4p16.3 contains CpG island 1865 AF012899 Sambucus nigra ribosome inactivating protein precursor 9e-009 mRNA, complete cds

<a href="#">Full</a>	<a href="#">Title</a>	<a href="#">Citation</a>	<a href="#">Front</a>	<a href="#">Review</a>	<a href="#">Classification</a>	<a href="#">Date</a>	<a href="#">Reference</a>	<a href="#">Sequences</a>	<a href="#">Attachments</a>	<a href="#">KDDC</a>	<a href="#">Drawn Desc</a>	<a href="#">Image</a>
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L1: Entry 16 of 50

File: PGPB

Feb 27, 2003

PGPUB-DOCUMENT-NUMBER: 20030040496  
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TITLE: Methods for halting unwanted cell growth, such as using ligand-directed nucleic acid delivery vehicles

PUBLICATION-DATE: February 27, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
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Sosnowski, Barbara A.	Coronado	CA	US	
Baird, Andrew	San Diego	CA	US	
Pierce, Glenn	Rancho Sante Fe	CA	US	

US-CL-CURRENT: 514/44; 424/143.1, 514/8

ABSTRACT:

Methods of treating tumors with preparations of conjugates of a receptor-binding internalized ligand and a cytocide-encoding agent are provided. The conjugates contain a polypeptide that is reactive with an FGF receptor, such as FGF2, or other ligand coupled to a nucleic acid binding domain. One or more linkers may be used in the conjugation. The linker is selected to increase the specificity, toxicity, solubility, serum stability, or intracellular availability, and promote nucleic acid condensation of the targeted moiety. The conjugates are complexed with a cytocide-encoding agent, such as DNA encoding saporin or a prodrug-encoding agent. Conjugates of a receptor-binding internalized ligand to a nucleic acid molecule are

also provided.

L1: Entry 16 of 50

File: PGPB

Feb 27, 2003

DOCUMENT-IDENTIFIER: US 20030040496 A1

TITLE: Methods for halting unwanted cell growth, such as using ligand-directed nucleic acid delivery vehicles

Summary of Invention Paragraph (16):

[0014] In yet other preferred embodiments, the nucleic acid binding domain is selected from the group consisting of helix-turn-helix motif proteins, homeodomain proteins, zinc finger motif proteins, steroid receptor proteins, leucine zipper motif proteins, helix-loop-helix motif proteins, and .beta.-sheet motif proteins. In other preferred embodiments, the nucleic acid binding domain is a polycation, such as poly-L-lysine, poly-D-lysine, protamine, histone and spermine. Alternatively, the nucleic acid binding domain binds a DNA molecule that encodes a ribosome inactivating protein.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)

[KDDIC](#) | [Drawn Desc](#) | [Image](#)

17. Document ID: US 20030037355 A1

L1: Entry 17 of 50

File: PGPB

Feb 20, 2003

PGPUB-DOCUMENT-NUMBER: 20030037355

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030037355 A1

TITLE: Methods and compositions to modulate expression in plants

PUBLICATION-DATE: February 20, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Barbas, Carlos F. III	Solana Beach	CA	US	
Stege, Justin T.	San Diego	CA	US	
Guan, Xueni	San Diego	CA	US	
Dalmia, Bipin	San Diego	CA	US	

US-CL-CURRENT: 800/278; 435/320.1, 435/4, 435/419, 435/471, 530/350, 530/387.1,  
536/23.6, 800/284, 800/287, 800/288, 800/298

ABSTRACT:

The invention relates to the field of plant and agricultural technology. More specifically, the invention relates to the use of zinc finger proteins and fusions of said proteins to regulate gene expression and metabolic pathways in plants.

L1: Entry 17 of 50

File: PGPB

Feb 20, 2003

DOCUMENT-IDENTIFIER: US 20030037355 A1

TITLE: Methods and compositions to modulate expression in plants

Detail Description Paragraph (23):

[0089] As used herein, "expression cassette" refers to a DNA sequence capable of directing expression of a particular nucleotide sequence in an appropriate host

cell, comprising a promoter operably linked to the nucleotide sequence of interest which is operably linked to termination signals. It also typically comprises sequences required for proper translation of the nucleotide sequence. The coding region usually codes for a protein of interest but may also code for a functional RNA of interest, for example antisense RNA or a nontranslated RNA, in the sense or antisense direction. The expression cassette comprising the nucleotide sequence of interest may be chimeric, meaning that at least one of its components is heterologous with respect to at least one of its other components. The zinc finger-effector fusions of the present invention are chimeric. The expression cassette may also be one which is naturally occurring but has been obtained in a recombinant form useful for heterologous expression. Typically, however, the expression cassette is heterologous with respect to the host, i.e., the particular DNA sequence of the expression cassette does not occur naturally in the host cell and must have been introduced into the host cell or an ancestor of the host cell by a transformation event. The expression of the nucleotide sequence in the expression cassette may be under the control of a constitutive promoter or of an inducible promoter which initiates transcription only when the host cell is exposed to some particular external stimulus. In the case of a multicellular organism, such as a plant, the promoter can also be specific to a particular tissue or organ or stage of development. In the case of a plastid expression cassette, for expression of the nucleotide sequence from a plastid genome, additional elements, i.e., ribosome binding sites, may be required.

[Full] [Title] [Citation] [Front] [Review] [Classification] [Date] [Reference] [Sequences] [Attachments]

[KIND] [Drawn Descr] [Image]

18. Document ID: US 20030024006 A1

L1: Entry 18 of 50

File: PGPB

Jan 30, 2003

PGPUB-DOCUMENT-NUMBER: 20030024006

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030024006 A1

TITLE: Gene switches

PUBLICATION-DATE: January 30, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Choo, Yen	Cambridge		GB	
Ullman, Christopher Graeme	London		GB	

US-CL-CURRENT: 800/278

ABSTRACT:

Disclosed herein are methods and compositions relating to gene switches that use molecule capable of binding DNA sequences.

L1: Entry 18 of 50

File: PGPB

Jan 30, 2003

DOCUMENT-IDENTIFIER: US 20030024006 A1

TITLE: Gene switches

Summary of Invention Paragraph (254):

[0248] In the above example, the zinc fingers (DNA binding molecules) are present on phage. However, alternative methods for displaying the DNA molecules could be used. As described in section A above, an entirely in vitro polysome display system has

also been reported (Mattheakis et al., (1994) Proc Natl Acad Sci USA, 91, 9022-6) in which nascent peptides are physically attached via the ribosome to the RNA which encodes them. Using a library of RNA/ribosomes expressing the DNA binding molecules, screening is performed in a similar manner to the phage display method except that typically, after an initial preselection step to remove DNA binding molecules that bind in the absence of the ligand only one selection step is performed and the resulting DNA binding molecules identified by cloning the RNA from the RNA/ribosome complexes and sequencing the clones obtained.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)

[KJPC](#) | [Drawn Desc](#) | [Image](#)

19. Document ID: US 20030005483 A1

L1: Entry 19 of 50

File: PGPB

Jan 2, 2003

PGPUB-DOCUMENT-NUMBER: 20030005483

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030005483 A1

TITLE: Data processing of the maize prolifera genetic sequence

PUBLICATION-DATE: January 2, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Nadimpalli, Ramgopal	Bloomfield	NJ	US	
Simmons, Carl R.	Des Moines	IA	US	

US-CL-CURRENT: 800/278; 435/200, 435/320.1, 435/419, 435/69.1, 536/23.6, 702/20

ABSTRACT:

The invention provides isolated prolifera nucleic acids and their encoded proteins. The present invention provides methods and compositions relating to altering prolifera levels in plants. The invention further provides recombinant expression cassettes, host cells, transgenic plants, and antibody compositions.

L1: Entry 19 of 50

File: PGPB

Jan 2, 2003

DOCUMENT-IDENTIFIER: US 20030005483 A1

TITLE: Data processing of the maize prolifera genetic sequence

Summary of Invention Paragraph (244):

[0241] In some embodiments, data representing a genetic sequence of the present invention is a data element within a data structure. The data structure may be defined by the computer programs that define the processes of identification, modeling, or analysis (see below) or it may be defined by the programming of separate data storage and retrieval programs subroutines or systems. Thus, the present invention provides a memory for storing a data structure that can be accessed by a computer programmed to implement a process for identification, analysis, or modeling of a genetic sequence. The data structure, stored within memory, is associated with the data representing the genetic sequence and reflects the underlying organization and structure of the genetic sequence to facilitate program access to data elements corresponding to logical sub-components of the genetic sequence. The data structure enables the genetic sequence to be identified, analyzed, or modeled. The underlying order and structure of a genetic sequence is data representing the higher order organization of the primary sequence. Such higher order structures affect transcription, translation, enzyme kinetics, or reflects

structural domains or motifs. Exemplary logical sub-components which constitute the higher order organization of the genetic sequence include but are not limited to: restriction enzyme sites, endopeptidase sites, major grooves, minor grooves, beta-sheets, alpha helices, open reading frames (ORFs), 5' untranslated regions (UTRs), 3' UTRs, ribosome binding sites, glycosylation sites, signal peptide domains, intron-exon junctions, poly-A tails, transcription initiation sites, translation start sites, translation termination sites, methylation sites, zinc finger domains, modified amino acid sites, preprotein-protein junctions, proprotein-protein junctions, transit peptide domains, single nucleotide polymorphisms (SNPs), simple sequence repeats (SSRs), restriction fragment length polymorphisms (RFLPs), insertion elements, transmembrane spanning regions, and stem-loop structures.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)

[KML](#) | [Drawn Desc](#) | [Image](#)

20. Document ID: US 20030003471 A1

L1: Entry 20 of 50

File: PGPB

Jan 2, 2003

PGPUB-DOCUMENT-NUMBER: 20030003471  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20030003471 A1

TITLE: cDNAs encoding polypeptides

PUBLICATION-DATE: January 2, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Famodu, Omolayo O.	Newark	DE	US	
Miao, Guo-Hua	Johnston	IA	US	
Simmons, Carl R.	Des Moines	IA	US	
Weng, Zude	Des Plaines	IL	US	
Cahoon, Rebecca E.	Wilmington	DE	US	
Sakai, Hajime	Wilmington	DE	US	
Qun, Zhu	Wilmington	DE	US	
Thorpe, Catherine J.	Cambridgeshire	PA	GB	
Fader, Gary M.	Landenberg	DE	US	
Li, Bailin	Hockessin		US	

US-CL-CURRENT: 435/6; 435/183, 435/235.1, 435/252.3, 435/254.2, 435/325, 435/410, 435/69.1, 536/23.2

ABSTRACT:

This invention relates to an isolated nucleic acid fragment encoding a phospholipase D. The invention also relates to the construction of a chimeric gene encoding all or a substantial portion of the phospholipase D, in sense or antisense orientation, wherein expression of the chimeric gene results in production of altered levels of the phospholipase D in a transformed host cell.

L1: Entry 20 of 50

File: PGPB

Jan 2, 2003

DOCUMENT-IDENTIFIER: US 20030003471 A1  
TITLE: cDNAs encoding polypeptides

Summary of Invention Paragraph (102):

[0098] In some embodiments, data representing a genetic sequence of the present invention is a data element within a data structure. The data structure may be defined by the computer programs that define the processes of identification, modeling, or analysis (see below) or it may be defined by the programming of separate data storage and retrieval programs, subroutines or systems. Thus, the present invention provides a memory for storing a data structure that can be accessed by a computer programmed to implement a process for identification, analysis, or modeling of a genetic sequence. The data structure, stored within memory, is associated with the data representing the genetic sequence and reflects the underlying organization and structure of the genetic sequence to facilitate program access to data elements corresponding to logical sub-components of the genetic sequence. The data structure enables the genetic sequence to be identified, analyzed, or modeled. The underlying order and structure of a genetic sequence is data representing the higher order organization of the primary sequence. Such higher order structures affect transcription, translation, enzyme kinetics, or reflects structural domains or motifs. Exemplary logical sub-components which constitute the higher order organization of the genetic sequence include but are not limited to: restriction enzyme sites, endopeptidase sites, major grooves, minor grooves, beta-sheets, alpha helices, open reading frames (ORFs), 5' untranslated regions (UTRs), 3' UTRs, ribosome binding sites, glycosylation sites, signal peptide domains, intron-exon junctions, poly-A tails, transcription initiation sites, translation start sites, translation termination sites, methylation sites, zinc finger domains, modified amino acid sites, preprotein-protein junctions, proprotein-protein junctions, transit peptide domains, single nucleotide polymorphisms (SNPs), simple sequence repeats (SSRs), restriction fragment length polymorphisms (RFLPs), insertion elements, transmembrane spanning regions, and stem-loop structures.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)

[KUMC](#) | [Drawn Desc](#) | [Image](#)

21. Document ID: US 20020173006 A1

L1: Entry 21 of 50

File: PGPB

Nov 21, 2002

PGPUB-DOCUMENT-NUMBER: 20020173006

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020173006 A1

TITLE: Poly zinc finger proteins with improved linkers

PUBLICATION-DATE: November 21, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Kim, Jin-Soo	Inchon	MA	KR	
Pabo, Carl O.	Newton		US	

US-CL-CURRENT: 435/69.1; 435/226, 435/320.1, 435/325, 435/455, 536/23.2

ABSTRACT:

The present invention provides methods for making chimeric zinc finger proteins with improved linkers, providing zinc finger proteins with enhanced affinity and specificity.

L1: Entry 21 of 50

File: PGPB

Nov 21, 2002

DOCUMENT-IDENTIFIER: US 20020173006 A1

TITLE: Poly zinc finger proteins with improved linkers

Detail Description Paragraph (78):

[0098] In addition to the promoter, the expression vector typically contains a transcription unit or expression cassette that contains all the additional elements required for the expression of the nucleic acid in host cells, either prokaryotic or eukaryotic. A typical expression cassette thus contains a promoter operably linked, e.g., to the nucleic acid sequence encoding the zinc finger protein, and signals required, e.g., for efficient polyadenylation of the transcript, transcriptional termination, ribosome binding sites, or translation termination. Additional elements of the cassette may include, e.g., enhancers, and heterologous spliced intronic signals.

<a href="#">Full</a>	<a href="#">Title</a>	<a href="#">Citation</a>	<a href="#">Front</a>	<a href="#">Reviews</a>	<a href="#">Classification</a>	<a href="#">Date</a>	<a href="#">Reference</a>	<a href="#">Sequences</a>	<a href="#">Attachments</a>	<a href="#">KMLC</a>	<a href="#">Drawn Desc</a>	<a href="#">Image</a>
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22. Document ID: US 20020164575 A1

L1: Entry 22 of 50

File: PGPB

Nov 7, 2002

PGPUB-DOCUMENT-NUMBER: 20020164575

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020164575 A1

TITLE: Gene identification

PUBLICATION-DATE: November 7, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Case, Casey C.	San Mateo	CA	US	
Urnov, Fyodor	Richmond	CA	US	

US-CL-CURRENT: 435/4; 435/6

## ABSTRACT:

The present disclosure provides methods and compositions for identifying a particular genomic sequence as a gene and/or a coding region, once that sequence has been tentatively identified as a gene based on genomic analysis using one or more gene prediction algorithms. The methods include the use of exogenous molecules such as zinc finger proteins which are capable of binding to and modulating expression of gene transcription, targeted to putative gene sequences, followed by assay for one or more selected phenotypes.

L1: Entry 22 of 50

File: PGPB

Nov 7, 2002

DOCUMENT-IDENTIFIER: US 20020164575 A1

TITLE: Gene identification

Detail Description Paragraph (160):

[0191] In addition to the promoter, the expression vector typically contains a transcription unit or expression cassette that contains all the additional elements required for the expression of the nucleic acid in host cells, either prokaryotic or eukaryotic. A typical expression cassette thus contains a promoter operably linked, e.g., to the nucleic acid sequence encoding the zinc finger protein, and signals required, e.g., for efficient polyadenylation of the transcript, transcriptional termination, ribosome binding sites, or translation termination. Additional elements of the cassette may include, e.g., enhancers, and heterologous spliced intronic

signals.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#) | [KMC](#) | [Draw Desc](#) | [Image](#)

23. Document ID: US 20020160940 A1

L1: Entry 23 of 50

File: PGPB

Oct 31, 2002

PGPUB-DOCUMENT-NUMBER: 20020160940

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020160940 A1

TITLE: Modulation of endogenous gene expression in cells

PUBLICATION-DATE: October 31, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Casey, Casey C.	San Mateo	CA	US	
Wolffe, Alan	Richmond	CA	US	
Urnov, Fyodor	Richmond	CA	US	
Lai, Albert	Richmond	CA	US	
Snowden, Andrew	Alameda	CA	US	
Tan, Siyuan	El Cerrito	CA	US	
Gregory, Philip				US

US-CL-CURRENT: 514/6; 435/455

ABSTRACT:

Disclosed herein are methods and compositions for modulating expression of endogenous cellular genes using recombinant zinc finger proteins.

L1: Entry 23 of 50

File: PGPB

Oct 31, 2002

DOCUMENT-IDENTIFIER: US 20020160940 A1

TITLE: Modulation of endogenous gene expression in cells

Detail Description Paragraph (42):

[0086] A "gene," for the purposes of the present disclosure, includes a DNA region encoding a gene product (see below), as well as all DNA regions which regulate the production of the gene product, whether or not such regulatory sequences are adjacent to coding and/or transcribed sequences. Accordingly, a gene includes, but is not necessarily limited to, promoter sequences, terminators, translational regulatory sequences such as ribosome binding sites and internal ribosome entry sites, enhancers, silencers, insulators, boundary elements, replication origins, matrix attachment sites and locus control regions. Further, a promoter can be a normal cellular promoter or, for example, a promoter of an infecting microorganism such as, for example, a bacterium or a virus. For example, the long terminal repeat (LTR) of retroviruses is a promoter region which may be a target for a modified zinc finger binding polypeptide. Promoters from members of the Lentivirus group, which include such pathogens as human T-cell lymphotropic virus (HTLV) 1 and 2, or human immunodeficiency virus (HIV) 1 or 2, are examples of viral promoter regions which may be targeted for transcriptional modulation by a modified zinc finger binding polypeptide as described herein.

24. Document ID: US 20020152497 A1

L1: Entry 24 of 50

File: PGPB

Oct 17, 2002

PGPUB-DOCUMENT-NUMBER: 20020152497

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020152497 A1

TITLE: Nucleic acid fragments encoding proteins involved in stress response

PUBLICATION-DATE: October 17, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Falco, Saverio Carl	Arden	DE	US	
Famodu, Omolayo O.	Newark	DE	US	
Meyers, Blake C.	Wilmington	DE	US	
Miao, Guo-Hua	Johnston	IA	US	
Odell, Joan T.	Unionville	PA	US	
Rafalski, J. Antoni	Wilmington	DE	US	
Thorpe, Catherine J.	St. Albans	DE	GB	
Sakai, Hajime	Wilmington	IL	US	
Weng, Zude	Des Plaines		US	

US-CL-CURRENT: 800/278; 435/183, 435/320.1, 435/325, 435/410, 435/69.1, 536/23.4

## ABSTRACT:

The invention provides isolated peptide-methionine sulfoxide reductase nucleic acids and their encoded proteins. The present invention provides methods and compositions relating to altering peptide-methionine sulfoxide reductase levels in plants. The invention further provides recombinant expression cassettes, host cells, transgenic plants, and antibody compositions.

L1: Entry 24 of 50

File: PGPB

Oct 17, 2002

DOCUMENT-IDENTIFIER: US 20020152497 A1

TITLE: Nucleic acid fragments encoding proteins involved in stress response

## CLAIMS:

22. The data processing system of claim 21, wherein said logical sub-component of said genetic sequence is a member selected from the group consisting of restriction enzyme sites, endopeptidase sites, major grooves, minor grooves, beta-sheet, alpha helices, ORFs, 5' UTRs, 3' UTRs, ribosome binding sites, glycosylation sites, signal peptide domains, intron-exon junctions, poly-A signals, transcription initiation sites, translation start sites, translation termination sites, methylation sites, zinc finger domains, modified amino acid sites, preprotein-protein junctions, protein-protein junctions, transit peptide domains, SNPs, SSRs, RFLPs, insertion elements, transmembrane spanning regions and stem-loop structures.

25. Document ID: US 20020146691 A1

L1: Entry 25 of 50

File: PGPB

Oct 10, 2002

PGPUB-DOCUMENT-NUMBER: 20020146691

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020146691 A1

TITLE: Methods of using randomized libraries of zinc finger proteins for the identification of gene function

PUBLICATION-DATE: October 10, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Case, Casey C.	San Mateo	CA	US	
Liu, Qiang	Foster City	CA	US	
Rebar, Edward J.	El Cerrito	CA	US	
Wolffe, Alan P.	Orinda	CA	US	

US-CL-CURRENT: 435/6; 435/4, 435/455

## ABSTRACT:

The present invention relates to methods of using libraries of randomized zinc finger proteins to identify genes associated with selected phenotypes.

L1: Entry 25 of 50

File: PGPB

Oct 10, 2002

DOCUMENT-IDENTIFIER: US 20020146691 A1

TITLE: Methods of using randomized libraries of zinc finger proteins for the identification of gene function

Detail Description Paragraph (80):

[0112] A typical expression cassette thus contains a promoter operably linked, e.g., to the nucleic acid sequence encoding the zinc finger protein, and signals required, e.g., for efficient polyadenylation of the transcript, transcriptional termination, ribosome binding sites, or translation termination. Additional elements of the cassette may include, e.g., enhancers, and heterologous spliced intronic signals.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)[KIMC](#) | [Drawn Desc](#) | [Image](#) 26. Document ID: US 20020142981 A1

L1: Entry 26 of 50

File: PGPB

Oct 3, 2002

PGPUB-DOCUMENT-NUMBER: 20020142981

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020142981 A1

TITLE: Gene expression profiles in liver cancer

PUBLICATION-DATE: October 3, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Horne, Darci T.	Gaithersburg	MD	US	
Scherf, Uwe	Gaithersburg	MD	US	
Vockley, Joseph	Damascus	MD	US	

US-CL-CURRENT: 514/44; 435/6

## ABSTRACT:

The present invention identifies the global changes in gene expression associated with liver cancer by examining gene expression in tissue from normal liver, metastatic malignant liver and hepatocellular carcinoma. The present invention also identifies expression profiles which serve as useful diagnostic markers as well as markers that can be used to monitor disease states, disease progression, drug toxicity, drug efficacy and drug metabolism.

L1: Entry 26 of 50

File: PGPB

Oct 3, 2002

DOCUMENT-IDENTIFIER: US 20020142981 A1

TITLE: Gene expression profiles in liver cancer

Detail Description Table CWU (13):

D38073 1651 minichromosome maintenance deficient (*S. cerevisiae*) 3 3.65 up 0.01869  
 R49216 2879 EST 3.64 up 0.0004 R87989 2978 centrosome associated protein 3.64 up 0.00008 AA135407 292 endogenous retroviral protease 3.64 up 0.01086 AA148977 322 EST 3.64 up 0.02911 D63874 1714 high-mobility group (nonhistone chromosomal) protein 1 3.64 up 0.00228 AA454597 1166 EST 3.63 up 0.0067 F04320 1786 replication factor C (activator 1) 4 (37 kD) 3.63 up 0.01119 X68688 3777 zinc finger protein 33a (K0X 31) 3.62 up 0.00319 R27432 2807 EST 3.62 up 0.00014 AA401958 832 EST 3.62 up 0.01232 HG2279-HT2375 triosephosphate isomerase 1 3.62 up 0.00192 AA416973 913 EST 3.61 up 0.0091 N62675 2593 DEAD/H (Asp-Glu-Ala-Asp/His) box polypeptide 16 3.61 up 0.04034 T15477 3058 EST 3.61 up 0.00005 AA460017 1225 EST 3.61 up 0.00109 D43950 1660 chaperonin containing TCP1, subunit 5 (epsilon) 3.61 up 0.00672 N99505 2745 EST 3.6 up 0.04499 AA443271 1073 KIAA0546 protein 3.6 up 0.01228 N89937 2710 LIM domain only 7 3.6 up 0.01375 R71082 2950 programmed cell death 5 3.6 up 0.01338 AA412720 905 EST 3.6 up 0.01396 X17567 3716 small nuclear ribonucleoprotein polypeptides B and B1 3.59 up 0.00586 AA399226 803 tight junction protein 3 (zona occludens 3) 3.59 up 0.02002 R55470 2903 EST 3.59 up 0.00515 X79234 3800 ribosomal protein L11 3.58 up 0.00051 D80917 1736 KIAA0670 protein/acinus 3.58 up 0.00007 W81375 3610 EST 3.58 up 0.00322 U89606 3451 pyridoxal (pyridoxine, vitamin B6) kinase 3.58 up 0.00322 X05610 3682 collagen, type IV, alpha 2 3.57 up 0.01351 AA443941 1085 tumor suppressing subtransferable candidate 1 3.57 up 0.01685 N56935 2574 EST 3.57 up 0.00282 N68385 2634 ribosomal protein L13a 3.57 up 0.00417 R49084 2878 KIAA0770 protein 3.57 up 0.00447 U83246 3442 copine I 3.56 up 0.01672 AA182001 386 EST 3.56 up 0.00945 N51342 2544 EST 3.56 up 0.00001 W42627 3508 EST 3.56 up 0.00198 X66364 3767 cyclin-dependent kinase 5 3.55 up 0.02824 AA451680 1136 hepatocellular carcinoma associated protein; breast cancer associated gene 1 3.55 up 0.00708 Z38909 3894 EST 3.55 up 0.03195 T48293 3132 EST 3.55 up 0.01355 W37680 3502 EST 3.55 up 0.01036 AA252994 557 apoptosis inhibitor 4 (survivin) 3.55 up 0.00075 AA134052 285 Rab geranylgeranyltransferase, alpha subunit 3.54 up 0.03062 AA504806 1416 EST 3.54 up 0.00221 T12599 3055 ribosomal protein L21 3.54 up 0.01437 L19527 2169 ribosomal protein L27 3.54 up 0.00025 U17760 3314 laminin, beta 3 (nicein (125 kD), kalinin (140 kD), BM600 (125 kD)) 3.54 up 0.01853 AA056361 140 integral membrane protein 2C 3.53 up 0.02983 H55437 1948 kraken-like 3.53 up 0.02344 C14098 1566 EST 3.53 up 0.04401 H98924 2072 chromatin assembly factor 1, subunit A (p150) 3.53 up 0.02106 AA094517 202 EST 3.52 up 0.04805 AA237017 521 KIAA1068 protein 3.52 up 0.00976 T58607 3154 EST 3.52 up 0.04102 AA028103 61 EST 3.52 up 0.01142 M136547 302 EST 3.51 up 0.00308 AA151182 332 EST 3.51 up 0.00043 AA400271 814 EST 3.51 up 0.00742 U93868 3462 polymerase (RNA) III (DNA directed) (32 kD) 3.5 up 0.01235 W73914 3592 EST 3.5 up 0.04782 AA482007 1331 EST 3.49 up 0.00167 AA452259 1143 EST 3.49 up 0.00114 HG3549-HT3751 ribosomal protein L10 3.49 up 0 U79266 3433 protein predicted by clone 23627 3.49 up 0.00004 X07820 3692 matrix metalloproteinase 10 (stromelysin 2) 3.49

up 0.00689 H08863 1859 hypothetical protein 3.48 up 0.00205 AA292659 710 EST 3.48 up 0.00037 AA432162 1029 DKFZP586B2022 protein 3.48 up 0.03851 T92935 3254 EST 3.48 up 0.03578 X67247 3771 mitogen-activated protein kinase kinase kinase kinase 3 3.48 up 0.00012 AA426521 967 Sjogren's syndrome nuclear autoantigen 1 3.47 up 0.01161 AA489707 1371 EST 3.47 up 0.03433 AA609008 1475 EST 3.46 up 0.02935 L36720 2205 bystin-like 3.46 up 0.00094 D21261 1629 transgelin 2 3.46 up 0.00685 AA446968 1097 EST 3.45 up 0.02232 AA459310 1214 EST 3.45 up 0.00179 N30436 2483 EST 3.45 up 0.02356 AA410962 887 peroxisome proliferative activated receptor, delta 3.45 up 0.04574 F02800 1780 EST 3.45 up 0.03238 U14970 3304 ribosomal protein S5 3.45 up 0.00915 U26726 3335 hydroxysteroid (11-beta) dehydrogenase 2 3.45 up 0.02342 H17476 1889 EST 3.44 up 0.00479 D19737 1623 golgi autoantigen, golgin subfamily a, 3 3.44 up 0.02212 U76366 3423 Treacher Collins-Franceschetti syndrome 1 3.44 up 0.00021 L40904 2212 peroxisome proliferative activated receptor, gamma 3.43 up 0.03511 AA427442 971 guanine nucleotide regulatory factor 3.43 up 0.01547 R77631 2966 EST 3.43 up 0.00006 AA398761 799 EST 3.43 up 0.00726 D80662 1733 adaptor-related protein complex 1, gamma 2 subunit 3.43 up 0.00108 M77836 2400 pyrroline-5-carboxylate reductase 1 3.43 up 0.00759 T78922 3221 stem cell growth factor; lymphocyte secreted C-type lectin 3.42 up 0.02419 N51053 2542 eukaryotic translation initiation factor 5 3.42 up 0.01326 AA134158 287 EST 3.42 up 0.0277 AA454710 1168 EST 3.42 up 0.00653 AA446949 1096 EST 3.41 up 0.03411 AA164252 358 VGF nerve growth factor inducible 3.41 up 0.00154 T59161 3158 thymosin, beta 10 3.41 up 0.01885 T35725 3112 EST 3.4 up 0.00149 M60854 2367 ribosomal protein S16 3.4 up 0.00001 AA135871 294 EST 3.39 up 0.01544 AA599244 1448 KIAA0530 protein 3.39 up 0.01246 D25274 1632 EST 3.39 up 0.00238 U33286 3348 chromosome segregation 1 (yeast homolog)-like 3.39 up 0.00939 AA384184 774 DKFZP586B0519 protein 3.38 up 0.01209 H04753 1839 EST 3.38 up 0.02447 AA422049 937 EST 3.38 up 0.0067 AA233886 475 D site of albumin promoter (albumin D-box) binding protein 3.38 up 0.0218 U86409 3449 EST 3.38 up 0.00003 X52851 3722 EST 3.38 up 0.0001 U84720 3445 RAE1 (RNA export 1, S.pombe) homolog 3.37 up 0.03586 M31520 2328 ribosomal protein S24 3.37 up 0.00077 AA458890 1206 EST 3.36 up 0.00303 AA504413 1413 EST 3.35 up 0.00079 AA001409 1 EST 3.35 up 0.04092 AA251909 549 EST 3.35 up 0.03937 AA461473 1242 nebulette 3.35 up 0.03855 J04823 2115 cytochrome c oxidase subunit VIII 3.35 up 0.00075 M26708 2311 prothymosin, alpha (gene sequence 28) 3.35 up 0.00064 AA370163 766 EST 3.34 up 0.00643 AA149889 326 neighbor of A-kinase anchoring protein 95 3.34 up 0.02054 U22376 3327 v-myb avian myeloblastosis viral oncogene homolog 3.34 up 0.03416 stress-associated endoplasmic reticulum protein 1; ribosome associated C00021 1551 membrane protein 4 3.33 up 0.00215 AA156450 342 EST 3.33 up 0.00587 AA338729 743 EST 3.33 up 0.00046 D83783 1748 trinucleotide repeat containing 11 (THR-associated protein, 230 kDa subunit) 3.33 up 0.00748 HG4542-HT4947 ribosomal protein L15 3.33 up 0.00023 AA427825 981 EST 3.33 up 0.01615 D43949 1659 KIAA0082 protein 3.32 up 0.0014 D50913 1672 KIAA0123 protein 3.32 up 0.01202 AA478599 1304 G protein-coupled receptor 56 3.31 up 0.00182 H93021 2033 peptidylprolyl isomerase A (cyclophilin A) 3.31 up 0.0183 R53109 2898 dimethylarginine dimethylaminohydrolase 2 3.31 up 0.02389 AA132983 274 DKFZP586G1517 protein 3.31 up 0.01155 H93652 2039 ribosomal protein S5 3.31 up 0.00788 T33508 3105 phosphatidylinositol-4-phosphate 5-kinase, type II, beta 3.31 up 0.00416 M33197 2337 glyceraldehyde-3-phosphate dehydrogenase 3.31 up 0.00009 H59617 1964 EST 3.3 up 0.04588 D51287 1680 ribosomal protein S12 3.3 up 0.02829 L20941 2174 ferritin, heavy polypeptide 1 3.3 up 0.01172 M91083 2418 chromosome 11 open reading frame 13 3.3 up 0.00163 Z68228 3944 junction plakoglobin 3.3 up 0.0237 R73565 2958 EST 3.29 up 0.03489 Z39200 3899 EST 3.29 up 0.00586 AA084921 182 ribosomal protein S10 3.29 up 0.04872 T59668 3159 lysyl oxidase 3.28 up 0.00588 AA280928 642 EST 3.27 up 0.04625 AA397916 784 EST 3.27 up 0.02895 D20464 1625 bromodomain adjacent to zinc finger domain, 2B 3.27 up 0.04897 N73846 2679 EST 3.27 up 0.00012 080237 1729 actin related protein 2/3 complex, subunit 4 (20 kD) 3.27 up 0.00137 T47032 3123 partner of RAC1 (arfaptin 2)

Detail Description Table CWU (21):

6.19 down 0.00428 W42996 3514 EST 6.18 down 0.00587 Z47553 3936 flavin containing monooxygenase 5 6.17 down 0.00011 N36001 2503 EST 6.16 down 0.00222 N27670 2473 progesterone membrane binding protein 6.15 down 0.00321 N75203 2690 EST 6.15 down 0.00181 R06271 2765 EST 6.14 down 0.00063 R40946 2844 crystallin, zeta (quinone reductase) 6.14 down 0.00156 U66674 3407 ATP-binding cassette, sub-family C (CFTR/MRP), member 3 6.13 down 0.00127 D82061 1741 Ke6 gene, mouse, human homolog of 6.1 down 0.00104 R06977 2774 glucokinase (hexokinase 4) regulatory protein 6.1 down 0.00049 W87781 3633 EST 6.1 down 0.00045 M15465 2266 pyruvate kinase, liver and RBC

6.1 down 0.00069 AA609773 1489 EST 6.09 down 0.01103 AA197311 422 intercellular adhesion molecule 1 (CD54), human rhinovirus receptor 6.07 down 0.00053 M13690 2252 complement component 1 inhibitor (angioedema, hereditary) 6.07 down 0.00045 R48540 2872 EST 6.05 down 0.00086 AA453770 1157 EST 6.04 down 0.00524 AA455097 1172 EST 6.03 down 0.00419 D82422 1745 ferroportin 1; iron regulated gene 1 6.01 down 0.02351 F13702 1826 EST 6.01 down 0.00064 M83652 2407 properdin P factor, complement 6 down 0.00002 L11708 2158 hydroxysteroid (17-beta) dehydrogenase 2 5.99 down 0.01516 glucan (1,4-alpha-), branching enzyme 1 (glycogen branching H71861 1993 enzyme, Andersen disease, glycogen storage disease type IV) 5.97 down 0.00007 X97324 3836 adipose differentiation-related protein; adipophilin 5.97 down 0.04638 aldo-keto reductase family 7, member A2 (aflatoxin aldehyde AA157799 348 reductase) 5.96 down 0 M35590 2345 small inducible cytokine A4 5.96 down 0.00604 H02855 1832 EST 5.96 down 0.00458 C16420 1576 EST 5.95 down 0.00119 X07767 3691 protein kinase, cAMP-dependent, catalytic, alpha 5.94 down 0.00028 AA045870 108 EST 5.93 down 0.00017 Z80345 3948 acyl-Coenzyme A dehydrogenase, C-2 to C-3 short chain 5.93 down 0.0024 N93764 2736 EST 5.92 down 0.0109 AA031543 68 translocation protein 1 5.92 down 0.00405 AA620667 1506 protein tyrosine phosphatase type IVA, member 1 5.92 down 0.00206 tissue factor pathway inhibitor (lipoprotein-associated coagulation M59499 2363 inhibitor) 5.92 down 0.0005 X91148 3818 microsomal triglyceride transfer protein (large polypeptide, 88kD) 5.91 down 0.00045 R09053 2782 EST 5.9 down 0.0002 Z39476 3905 EST 5.9 down 0.00687 AA233347 470 zinc finger protein 216 5.9 down 0.0041 M13232 2251 coagulation factor VII (serum prothrombin conversion accelerator) 5.9 down 0.00014 T69384 3197 period (Drosophila) homolog 1 5.88 down 0.01219 D51279 1679 ovarian granulosa cell protein (13kD) 5.88 down 0.01271 M64554 2380 coagulation factor XII, B polypeptide 5.87 down 0.00011 C02099 1560 CGI-131 protein 5.85 down 0.02377 Y08409 3851 thyroid hormone responsive SPOT14 (rat) homolog 5.84 down 0.00455 H99727 2080 adipose differentiation-related protein; adipophilin 5.83 down 0.04346 L13278 2163 crystallin, zeta (quinone reductase) 5.83 down 0.0034 S77356 3033 EST 5.83 down 0.00122 M16474 2271 butyrylcholinesterase 5.82 down 0.00113 U32576 3346 apolipoprotein C-IV 5.81 down 0.04343 D37931 1650 ribonuclease, RNase A family, 4 5.81 down 0.00836 AA446587 1091 EST 5.8 down 0.00012 R93908 2993 EST 5.8 down 0.02699 AA086201 185 EST 5.8 down 0.00012 AA164586 359 estrogen receptor 1 5.8 down 0.00182 AF007216 1550 solute carrier family 4, sodium bicarbonate cotransporter, member 4 5.79 down 0.00005 AA479498 1314 EST 5.78 down 0.01489 AA424813 948 EST 5.77 down 0.00503 H03348 1833 claudin 1 5.77 down 0.0001 R62173 2923 UDP-glucose dehydrogenase 5.76 down 0.0006 Z39976 3912 EST 5.76 down 0.00012 AA219039 446 EST 5.76 down 0.00053 AA608751 1469 EST 5.76 down 0.01404 T95064 3259 EST 5.75 down 0.00604 H09364 1867 succinate dehydrogenase complex, subunit A, flavoprotein (Fp) 5.74 down 0.03125 T90841 3250 EST 5.74 down 0.01876 T03441 3043 cytochrome b-561 5.74 down 0.02781 AA424307 944 EST 5.73 down 0.0074 AA398386 793 EST 5.71 down 0.00007 R43910 2851 EST 5.71 down 0 U12778 3300 acyl-Coenzyme A dehydrogenase, short/branched chain 5.68 down 0.00116 AA255903 573 CD39-like 4 5.67 down 0.01687 quinolinate phosphoribosyltransferase (nicotinate-nucleotide AA252289 552 pyrophosphorylase (carboxylating)) 5.66 down 0.01389 AA262766 609 EST 5.66 down 0.03832 T64887 3172 protein phosphatase 5, catalytic subunit 5.66 down 0.00349 D11802 1597 angiotensinogen 5.65 down 0.00009 D45714 1664 EST 5.64 down 0.00384 U70732 3414 glutamic-pyruvate transaminase (alanine aminotransferase) 5.64 down 0.00146 H88675 2022 EST 5.63 down 0.00554 AA442342 1070 EST 5.62 down 0.00052 T79863 3225 EST 5.62 down 0.00074 AA454733 1169 EST 5.61 down 0.01182 W72972 3584 EST 5.61 down 0.00939 N95495 2741 EST 5.61 down 0.00308 J03764 2097 plasminogen activator inhibitor, type I 5.6 down 0.02196 glucan (1,4-alpha-), branching enzyme 1 (glycogen branching L07956 2148 enzyme, Andersen disease, glycogen storage disease type IV) 5.6 down 0.00029 AA090439 192 ribosomal protein S6 5.58 down 0.00501 AA419507 924 EST 5.58 down 0.00578 AA236982 520 sterol carrier protein 2 5.56 down 0.01542 glutamate-cysteine ligase (gamma-glutamylcysteine synthetase), L35546 2203 regulatory (30.8kD) 5.56 down 0.0005 M16967 2275 coagulation factor V (proaccelerin, labile factor) 5.56 down 0.00047 AB002328 1536 calcineurin binding protein 1 5.55 down 0.00016 AA450281 1134 EST 5.55 down 0.00004 W47175 3531 3-prime-phosphoadenosine 5-prime-phosphosulfate synthase 2 5.54 down 0.00914 N52845 2553 EST 5.53 down 0.00088 AA425782 956 KIAA0874 protein 5.52 down 0.03433 R10684 2787 EST 5.51 down 0.00741 AA436926 1059 EST 5.5 down 0.00984 AA452598 1148 genethonin 1 5.49 down 0.00163 D11756 1596 EST 5.49 down 0.01272 AA223335 449 propionyl Coenzyme A carboxylase, beta polypeptide 5.49 down 0.02761 D87436 1761 KIAA0249 gene product 5.49 down 0.00333 J04080 2105 complement component 1, s subcomponent 5.48 down 0.0239 X65962 3766 cytochrome P450, subfamily IIC

(mephenytoin 4-hydroxylase) 5.47 down 0.00014 AA443822 1082 EST 5.46 down 0.02538  
 AA485089 1341 EST 5.46 down 0.00044 AA032048 72 EST 5.45 down 0.00383 AA400471 816  
 EST 5.45 down 0.0056 AA490159 1374 glucose-6-phosphatase, transport  
 (glucose-6-phosphate) protein 1 5.44 down 0 M12174 2242 ras homolog gene family,  
 member B 5.44 down 0.0088 U11313 3296 sterol carrier protein 2 5.44 down 0.00187  
 N65959 2611 EST 5.43 down 0.00044 AA482594 1337 EST 5.42 down 0.00387 AA455865 1180  
 phosphatidylinositol glycan, class B 5.41 down 0.00004 N23761 2456 DKFZP586G011  
 protein 5.41 down 0.00448 U49352 3374 2,4-dienoyl CoA reductase 1, mitochondrial  
 5.41 down 0.02371 R63545 2926 EST 5.4 down 0.00202 AA258308 590 EST 5.4 down 0.00023  
 R34362 2821 KIAA0327 gene product 5.4 down 0.04615 AA621192 1515 EST 5.39 down  
 0.0016 T69020 3192 EST 5.39 down 0.00383 AA598679 1434 EST 5.37 down 0.00467 R43365  
 2849 EST 5.37 down 0.00103 AA455987 1183 EST 5.36 down 0.00029 C01257 1554 EST 5.35  
 down 0.00608 D31716 1647 basic transcription element binding protein 1 5.35 down  
 0.00086 L05779 2140 epoxide hydrolase 2, cytoplasmic 5.35 down 0.00006  
 UDP-N-acetylglucosamine-2-epimerase/N-acetylmannosamine AA490775 1380 kinase 5.34  
 down 0.00118 R15825 2791 KIAA0946 protein; Huntingtin interacting protein H 5.33  
 down 0.00391 AA342771 749 EST 5.33 down 0.00331 F10466 1820 EST 5.32 down 0.02494  
 S72370 3029 pyruvate carboxylase 5.31 down 0.00075 N27834 2474  
 alpha2,3-sialyltransferase 5.31 down 0.00039 D31117 1640 ribosome binding protein 1  
 (dog 180kD homolog) 5.3 down 0.02749 AA032005 71 EST 5.3 down 0.01202 N48315 2526  
 adaptor-related protein complex 2, mu 1 subunit 5.3 down 0.0149 T08879 3048  
 cathepsin F 5.29 down 0.0008 X02160 3668 insulin receptor 5.29 down 0.0001 Z24459  
 3866 mature T-cell proliferation 1 5.29 down 0.00001 AA236230 508 EST 5.28 down  
 0.01517 AA258353 593 EST 5.28 down 0.00193 N64017 2605 EST 5.27 down 0.00022 X90999  
 3817 hydroxyacyl glutathione hydrolase; glyoxalase 2 5.27 down 0.00047 AA347717 754  
 EST 5.25 down 0.00207 U19523 3319 GTP cyclohydrolase 1

<a href="#">Full</a>	<a href="#">Title</a>	<a href="#">Citation</a>	<a href="#">Front</a>	<a href="#">Review</a>	<a href="#">Classification</a>	<a href="#">Date</a>	<a href="#">Reference</a>	<a href="#">Sequences</a>	<a href="#">Attachments</a>	<a href="#">KMLC</a>	<a href="#">Drawn Desc</a>	<a href="#">Image</a>
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27. Document ID: US 20020138882 A1

L1: Entry 27 of 50

File: PGPB

Sep 26, 2002

PGPUB-DOCUMENT-NUMBER: 20020138882  
 PGPUB-FILING-TYPE: new  
 DOCUMENT-IDENTIFIER: US 20020138882 A1

TITLE: Polynucleotides encoding proteins involved in plant metabolism

PUBLICATION-DATE: September 26, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Cahoon, Rebecca E.	Wilmington	DE	US	
Sakai, Hajime	Newark	DE	US	
Niu, Xiping	Johnston	IA	US	

US-CL-CURRENT: 800/320.1; 435/320.1, 435/419, 435/468, 530/350, 536/23.6, 708/100,  
 800/278, 800/298

ABSTRACT:

The invention provides isolated pyruvate dehydrogenase kinase nucleic acids and their encoded polypeptides. The present invention provides methods and compositions relating to altering pyruvate dehydrogenase kinase levels in plants. The invention further provides recombinant expression cassettes, host cells, transgenic plants, and antibody compositions.

L1: Entry 27 of 50

File: PGPB

Sep 26, 2002

DOCUMENT-IDENTIFIER: US 20020138882 A1

TITLE: Polynucleotides encoding proteins involved in plant metabolism

Detail Description Paragraph (198):

[0247] In some embodiments, data representing a genetic sequence of the present invention is a data element within a data structure. The data structure may be defined by the computer programs that define the processes of identification, modeling, or analysis (see below) or it may be defined by the programming of separate data storage and retrieval programs subroutines or systems. Thus, the present invention provides a memory for storing a data structure that can be accessed by a computer programmed to implement a process for identification, analysis, or modeling of a genetic sequence. The data structure, stored within memory, is associated with the data representing the genetic sequence and reflects the underlying organization and structure of the genetic sequence to facilitate program access to data elements corresponding to logical sub-components of the genetic sequence. The data structure enables the genetic sequence to be identified, analyzed, or modeled. The underlying order and structure of a genetic sequence is data representing the higher order organization of the primary sequence. Such higher order structures affect transcription, translation, enzyme kinetics, or reflects structural domains or motifs. Exemplary logical sub-components which constitute the higher order organization of the genetic sequence include but are not limited to: restriction enzyme sites, endopeptidase sites, major grooves, minor grooves, beta-sheets, alpha helices, open reading frames (ORFs), 5' untranslated regions (UTRs), 3' UTRs, ribosome binding sites, glycosylation sites, signal peptide domains, intron-exon junctions, poly-A tails, transcription initiation sites, translation start sites, translation termination sites, methylation sites, zinc finger domains, modified amino acid sites, preprotein-protein junctions, protein-protein junctions, transit peptide domains, single nucleotide polymorphisms (SNPs), simple sequence repeats (SSRs), restriction fragment length polymorphisms (RFLPs), insertion elements, transmembrane spanning regions, and stem-loop structures.

## CLAIMS:

22. The data processing system of claim 21, wherein said logical sub-component of said genetic sequence is a member selected from the group consisting of restriction enzyme sites, endopeptidase sites, major grooves, minor grooves, beta-sheet, alpha helices, ORFs, 5' UTRs, 3' UTRs, ribosome binding sites, glycosylation sites, signal peptide domains, intron-exon junctions, poly-A signals, transcription initiation sites, translation start sites, translation termination sites, methylation sites, zinc finger domains, modified amino acid sites, preprotein-protein junctions, protein-protein junctions, transit peptide domains, SNPs, SSRs, RFLPs, insertion elements, transmembrane spanning regions and stem-loop structures.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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R&D	Draft Desc	Image
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## □ 28. Document ID: US 20020102724 A1

L1: Entry 28 of 50

File: PGPB

Aug 1, 2002

PGPUB-DOCUMENT-NUMBER: 20020102724

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020102724 A1

TITLE: Novel hematopoietic genes and polypeptides

PUBLICATION-DATE: August 1, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Hidaka, Michihiro	Kumamoto		JP	
Stanford, William	Toronto		CA	
Caruana, Georgina	Melbourne		AU	
Kimura, Yuki	Toronto		CA	

US-CL-CURRENT: 435/320.1, 424/130.1, 435/419, 435/6, 435/69.1, 435/7.1, 435/7.4,  
530/350, 536/23.6, 536/24.1, 536/24.3, 800/13, 800/278

## ABSTRACT:

The invention also relates to novel genes primarily expressed in hematopoietic lineages, polypeptides encoded by the novel genes and truncations, analogs, homologs, and isoforms of the polypeptides; and, uses of the polypeptides and genes.

L1: Entry 28 of 50

File: PGPB

Aug 1, 2002

DOCUMENT-IDENTIFIER: US 20020102724 A1

TITLE: Novel hematopoietic genes and polypeptides

Detail Description Paragraph (179):

[0236] DNA fragments corresponding to the murine Hzf gene fragments were cloned from a 129/Sv genomic DNA library using a mouse Hzf cDNA probe (Hidaka et al., 2000). Seventeen overlapping phage genomic clones containing exons encoding three zinc finger domains were isolated. A targeting vector was designed to replace a 5.5 Kb genomic fragment including the exons encoding three zinc finger domains with an internal ribosome-entry site (IRES) LacZ and a neomycin resistant gene (neo). IRES LacZ and neo were inserted in the pPNT targeting vector in the sense orientation to Hzf transcription, such that IRES LacZ was flanked on the 3' side by 1.6 Kb of genomic DNA and that neo was flanked on the 5' side by 4.5 Kb of genomic DNA. The targeting vector was linearized with NotI and electroporated into R1 ES cells. After positive-negative selection with gancyclovir and G418, 800 surviving clones were picked and screened by Southern blot analysis. Three out of six homologous recombinant ES clones were aggregated into CD1 blastomeres and transferred to foster mothers to generate chimeras. Chimeric mice were mated with CD1 females, and germline transmission of the mutant allele was verified by PCR and Southern blot analysis of ear punched tissues and tail DNA from F1 offspring. A primer "a" and "b" specific for the Hzf gene (5'-GGACCCCTGTACAGAAAGCTGT-3' [SEQ ID. NO. 15] and 5'-GCTTGGTCTACAGAGTGATT-- 3' [SEQ ID. NO. 16], respectively) and a primer "c" specific for the IRES gene (5'-GGAGGGAGAGGGGGCGGAATT-3' [SEQ ID. NO. 17]) were used in PCR analysis. Germline transmission of the targeted Hzf allele was achieved for three independent ES clones. F2 offspring from heterozygous intercrosses were genotyped by Southern blotting. Mutant mice derived from three targeted ES cells showed the identical phenotype.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)
[Kipic](#) | [Draw Desc](#) | [Image](#)
 29. Document ID: US 20020094529 A1

L1: Entry 29 of 50

File: PGPB

Jul 18, 2002

PGPUB-DOCUMENT-NUMBER: 20020094529

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020094529 A1

TITLE: Gene identification

PUBLICATION-DATE: July 18, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Casey, Casey C.	San Mateo	CA	US	
Urnov, Fyodor	Richmond	CA	US	

US-CL-CURRENT: 435/6; 435/4, 435/455

ABSTRACT:

The present disclosure provides methods and compositions for identifying a particular genomic sequence as a gene and/or a coding region, once that sequence has been tentatively identified as a gene based on genomic analysis using one or more gene prediction algorithms. The methods include the use of exogenous molecules such as zinc finger proteins which are capable of binding to and modulating expression of gene transcription, targeted to putative gene sequences, followed by assay for one or more selected phenotypes.

L1: Entry 29 of 50

File: PGPB

Jul 18, 2002

DOCUMENT-IDENTIFIER: US 20020094529 A1

TITLE: Gene identification

Detail Description Paragraph (164):

[0194] In addition to the promoter, the expression vector typically contains a transcription unit or expression cassette that contains all the additional elements required for the expression of the nucleic acid in host cells, either prokaryotic or eukaryotic. A typical expression cassette thus contains a promoter operably linked, e.g., to the nucleic acid sequence encoding the zinc finger protein, and signals required, e.g., for efficient polyadenylation of the transcript, transcriptional termination, ribosome binding sites, or translation termination. Additional elements of the cassette may include, e.g., enhancers, and heterologous spliced intronic signals.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)

[KMLC](#) | [Drawn Desc](#) | [Image](#)

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TITLE: Gene markers useful for detecting skin damage in response to ultraviolet radiation

PUBLICATION-DATE: July 11, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Blumenberg, Miroslav	New York	NY	US	

US-CL-CURRENT: 435/6

## ABSTRACT:

The cellular response to ultraviolet radiation exposure has been characterized on the molecular level through the use of high density gene array technology. Nucleic acid molecules and protein molecules, the expression of which are repressed or induced in response to ultraviolet radiation exposure, are identified according to a temporal pattern of altered expression post ultraviolet radiation exposure. Methods are disclosed that utilized these ultraviolet radiation-regulated molecules as markers for ultraviolet radiation exposure. Other screening methods of the invention are designed for the identification of compounds that modulate the response of a cell to ultraviolet radiation exposure. The invention also provides compositions useful for drug screening or pharmaceutical purposes.

L1: Entry 30 of 50

File: PGPB

Jul 11, 2002

DOCUMENT-IDENTIFIER: US 20020090624 A1

TITLE: Gene markers useful for detecting skin damage in response to ultraviolet radiation

Summary of Invention Paragraph (23):

[0020] In accordance with a further aspect of the invention, there is provided a composition of matter comprising: (1) a plurality of nucleic acid molecules at least 90% identical to the group of polynucleotides regulated by a cell in response to ultraviolet radiation exposure; and (2) a substrate suitable for binding the nucleic acid molecules of (1). The group of polynucleotides regulated by the cell in response to ultraviolet radiation exposure comprises the following: M20030 Human small proline rich protein (sprII) mRNA, clone 930, X53065, M13903 Human involucrin gene, exon 2, L10343 Huma elafin gene, complete cds, M21302 Human small proline rich protein (sprII) mRNA, clone 174N, L05188 H. sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, X70326 Macmarcks, X52426 H. sapiens mRNA for cytokeratin 13, S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, M80254 H. sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, L08069 Human heat shock protein, E. coli Dnaj homolog mRNA, complete cds, U62800 Human cystatin M (CST6) mRNA, complete cds, L24564 Human Rad mRNA, complete cds, M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, Z49989 H. sapiens mRNA for smoothelin, X57985 H. sapiens genes for histones H2B.1 and H2A, L19779 H. sapiens histone H2A.2 mRNA, complete cds, D42040 Human mRNA for KIAA9001 gene, complete cds, M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, X54489 Human gene for melanoma growth stimulatory activity (MGSA), M92934 Human connective tissue growth factor, complete cds, Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, M72885 Human GOS2 gene, 5' flank and cds, X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homolog, X67325 H. sapiens p27 mRNA, U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, M26311 Human cystic fibrosis antigen mRNA, complete cds, L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', AF001294 H. sapiens IPL (IPL) mRNA, complete cds, M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splice, V00594 Human mRNA for metallothionein from cadmium-treated cells, V00599 Tubulin, Beta, X99920 H. sapiens mRNA for S100 calcium-binding protein A13, M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, M37583 Human histone (H2A.Z) mRNA, complete cds, S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], D49824 Human HLA-B null allele mRNA, S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], M90657 Human tumor antigen (L6) mRNA, complete cds, U09937 Human urokinase-type plasminogen receptor, exon 7, X77794 H. sapiens mRNA for cyclin G1, M28130 Human interleukin 8 (IL8) gene, complete cds, X14850 Human H2A.X mRNA encoding histone

H2A.X, AB000584 H. sapiens mRNA for TGF-beta superfamily protein, complete cds, U52101 Human YMP mRNA, complete cds, M57731 Human gro-beta mRNA, complete cds, D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, X83416 H. sapiens PrP gene, exon 2, X52882 Human t-complex polypeptide 1 gene, X57351 Human 1-8D gene from interferon-inducible gene family, X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, D38305 Human mRNA for Tob, complete cds, X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), Z29505 H. sapiens mRNA for nucleic acid binding protein sub2.3, D21853 Human mRNA for KIAA0111 gene, complete cds, X78687 H. sapiens G9 gene encoding sialidase, M13755 Human interferon-induced 17-kD/15-kD protein mRNA, complete cds, M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, M14328 Human alpha enolase mRNA, complete cds, V00599 Tubulin, Beta 2, U90546 Human butyrophilin (BTf4) mRNA, complete cds, K02574, X15729 Human mRNA for nuclear p68 protein, D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, X06956 Tubulin, Alpha 1, Isoform 44, X04654 Human mRNA for U1 RNA-associated 70K protein, M79463 Human PML-2 mRNA, complete CDS, L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genome, Y09022 H. sapiens mRNA for Not56-like protein, X57579 H. sapiens activin beta-A subunit (exon 2), U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, X61123 Human BTG1 mRNA, J04456 Human 14 kD lectin mRNA, complete cds, Z49254 H. sapiens L23-related mRNA, U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, D86974 Human mRNA for KIAA0220 gene, partial cds, Y07604 H. sapiens mRNA for nucleoside-diphosphate kinase, AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, Y00503 Human mRNA for keratin 19, L26336 Heat Shock Protein, 70 KD (Gb:Y00371), M62831 Human transcription factor ETR101 mRNA, complete cds, Z22548 H. sapiens thiol-specific antioxidant protein mRNA, U40369 Human spermidine/spermine N1-acetyltransferase (SSAT) gene, complete cds, M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, X51345 Human jun-B mRNA for JUN-B protein, Z21507 H. sapiens EF-1 delta gene encoding human elongation factor-1-delta, U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, D13413 Human mRNA for tumor-associated 120 kD nuclear protein p120, partial cds(carbox, L42379 H. sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), D86988 Human mRNA for KIAA0221 gene, complete cds, M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, M69043 H. sapiens MAD-3 mRNA encoding IkB-like activity, complete cds, D38251 Human mRNA for RPB5 (XAP4), complete cds, M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), L76200 Human guanylate kinase (GUK1) mRNA, complete cds, M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, U26727 Human p16INK4/MTS1 mRNA, complete cds, U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, M22960 Human protective protein mRNA, complete cds, D89667 H. sapiens mRNA for c-myc binding protein, complete cds, L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, M19309 Human slow skeletal muscle troponin T mRNA, clone H22h, D64142 Human mRNA for histone H1x, complete cds, U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, U35048 Human TSC-22 protein mRNA, complete cds, X82693 H. sapiens mRNA for E48 antigen, M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, U72649 Human BTG2 (BTG2) mRNA, complete cds, X92896 H. sapiens mRNA for ITBA2 protein, X74104 H. sapiens mRNA for TRAP beta subunit, M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, D15050 Human mRNA for transcription factor AREB6, complete cds, D10923 Human mRNA for HM74, M84739 Human autoantigen calreticulin mRNA, complete cds, U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, X67951 H. sapiens mRNA for proliferation-associated gene (pag), X82200 H. sapiens Staf50 mRNA, L27706 Human chaperonin protein (Tcp20) gene complete cds, U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, M12529 Human apolipoprotein E mRNA, complete cds, X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, U41766 Human metalloprotease/disintegrin/cysteine-rich protein precursor (MDC9) mRNA, c, AF006041 H. sapiens Fas-binding protein (DAXX) mRNA, partial cds, U28749 Human high-mobility

group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds, M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, U13991 Human TATA-binding protein associated factor 30 kD subunit (taffi30) mRNA, comp, J04794 Human aldehyde reductase mRNA, complete cds, U51586 Human siah binding protein 1 (SiahBP1) mRNA, partial cds, M58026 Human NB-1 mRNA, complete cds, X52425 Human IL-4-R mRNA for the interleukin 4 receptor, X94563 H. sapiens dbi/acbp gene exon 1 & 2, X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, X56681 Human junD mRNA, V01512 Human cellular oncogene c-fos (complete sequence), U09578 H. sapiens MAPKAP kinase (3pK) mRNA, complete cds, L13391 Human helix-loop-helix basic phosphoprotein (GOS8) gene, complete cds, U62317 Chromosome 22q13 BAC Clone CIT987SK-384D8 complete sequence, M16364 Human creatine kinase-B mRNA, complete cds, L19437 Human transaldolase mRNA containing transposable element, complete cds, X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), X52560 Nuclear Factor Nf-I16, X78549 H. sapiens brk mRNA for tyrosine kinase, L11066 Human mRNA sequence, X74008 H. sapiens mRNA for protein phosphatase 1 gamma, X87241 H. sapiens mRNA for hFat protein, S68616 Na<sup>+</sup>/H<sup>+</sup>exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450Hkv), complete cds, D86966 Human mRNA for KIAA0211 gene, complete cds, U17327 Human neuronal nitric oxide synthase (NOS1) mRNA, complete cds, U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, D85527 H. sapiens mRNA for LIM domain, partial cds, L07517 Mucin 6, Gastric (Gb:L07517), M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kD subunit, M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, M29064 Human hnRNP B1 protein mRNA, X64330 H. sapiens mRNA for ATP-citrate lyase, X89267 H. sapiens DNA for uroporphyrinogen decarboxylase gene, X91247 H. sapiens mRNA for thioredoxin reductase, L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, X78992 H. sapiens ERF-2 mRNA, L19314 Human HRY gene, complete cds, D90086 Human pyruvate dehydrogenase (EC 1.2.4.1) beta subunit gene, exons 1-10, X12794 Human v-erbA related ear-2 gene, L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, L08246 Human myeloid cell differentiation protein (MCL1) mRNA, L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, L04731 H. sapiens translocation T(4:11) of ALL-1 gene to chromosome 4, D87071 Human mRNA for KIAA0233 gene, complete cds, S74017 Nrf2-NF-E2-like basic leucine zipper transcriptional activator [human, hemin-ind, L41351 H. sapiens prostasin mRNA, complete cds, L00352 Human low density lipoprotein receptor gene, exon 18, D50683 H. sapiens mRNA for TGF-betaIIR alpha, complete cds, X89750 H. sapiens mRNA for TGIF protein, D13988 Human rab GDI mRNA, complete cds, M12886 Human T-cell receptor active beta-chain mRNA, complete cds, M55265 Human casein kinase II alpha subunit mRNA, complete cds, J03161 Human serum response factor (SRF) mRNA, complete cds, M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, U88629 Human RNA polymerase II elongation factor ELL2, complete cds, X04412 Human mRNA for plasma gelsolin, L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, U90716 Human cell surface protein HCAR mRNA, complete cds, M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, compl, Z11585 Potassium Channel Protein (Gb:Z11585), M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, D87442 Human mRNA for KIAA0253 gene, partial cds, M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, U68142 Human RaIGDS-like 2 (RGL2) mRNA, partial cds, U88898 Human endogenous retroviral H protease/integrase-derived ORF1 mRNA, complete cds, M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, Z30643 H. sapiens mRNA for chloride channel (putative) 2139 bp, X12953 Human rab2 mRNA, YPT1-related and member of ras family, D78129 H. sapiens mRNA for squalene epoxidase, partial cds, U63825 Human hepatitis delta antigen interacting protein A (dipA) mRNA, complete cds, S78825 Id1, M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, X06323 Human MRL3 mRNA for ribosomal protein L3 homolog (MRL3=mammalian ribosome L, D14043 Human mRNA for MGC-24, complete cds, L38951 H. sapiens importin beta subunit mRNA, complete cds, U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, U66616

Human SWI/SNF complex 170 KD subunit (BAF170) mRNA, complete cds, U29607 Human methionine aminopeptidase mRNA, complete cds, D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, D85429 H. sapiens gene for heat shock protein 40, complete cds, M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, X75342 H. sapiens SHB mRNA, D45906 H. sapiens mRNA for LIMK-2, complete cds, X59434 Human rohu mRNA for rhodanese, M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, D79994 Human mRNA for KIAA0172 gene, partial cds, D86965 Human mRNA for KIAA0210 gene, complete cds, Y13647 Stearyl-Coenzyme Desaturase, X52541 Human mRNA for early growth response protein 1 (hEGR1), Z26317 H. sapiens mRNA for desmoglein 2, M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, D87438 Human mRNA for KIAA0251 gene, partial cds, M31627 Human X box binding protein-i (XPB-1) mRNA, complete cds, X80692 H. sapiens ERK3 mRNA, U37122 Human adducin gamma subunit mRNA, complete cds, M83667 Human NF-IL6-beta protein mRNA, complete cds, J05211 Desmoplakin I, D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, X90858 H. sapiens mRNA for uridine phosphorylase, X76717 H. sapiens MT-11 mRNA, Y08915 H. sapiens mRNA for alpha 4 protein, U30999 Human (memc) mRNA, 3'UTR, L77886 Human protein tyrosine phosphatase mRNA, complete cds, U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, U28480 Uncoupling Protein Ucp, X53586 Human mRNA for integrin alpha 6, M64347 Human novel growth factor receptor mRNA, 3' cds, U52100 Human XMP mRNA, complete cds, D21852 Human mRNA for KIAA0029 gene, partial cds, X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), D87462 Human mRNA for KIAA0272 gene, partial cds, L40391 H. sapiens (clone s153) mRNA fragment, D87469 Human mRNA for KIAA0279 gene, partial cds, S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, L19267 H. sapiens 59 protein mRNA, 3' end, M81601 Human transcription elongation factor (SII) mRNA, complete cds, X52611 Human mRNA for transcription factor AP-2, U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, U09587 Human glycyl-tRNA synthetase mRNA, complete cds, L37127 H. sapiens RNA polymerase II mRNA, complete cds, U52426 H. sapiens GOK (STIM1) mRNA, complete cds, U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, D90209 Human mRNA for DNA binding protein TAXREB67, D83777 Human mRNA for KIAA0193 gene, complete cds, U42031 Human 54 kD progesterone receptor-associated immunophilin FKBP54 mRNA, partial, M80244 Human E16 mRNA, complete cds, D31883 Human mRNA for KIAA0059 gene, complete cds, J04444 Human cytochrome c-1 gene, complete cds, M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, M95787 Human 22 kD smooth muscle protein

Summary of Invention Paragraph (26):

[0022] In accordance with a further aspect of the invention, there is provided a composition of matter comprising: (1) a plurality of nucleic acid molecules at least 90% identical to the group of polynucleotides regulated by a cell in response to ultraviolet radiation exposure; and (2) a substrate suitable for binding the nucleic acid molecules of (1). The group of polynucleotides regulated by the cell in response to ultraviolet radiation exposure comprises the following: D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, L08069 Human heat shock protein, E. coli DnaJ homolog mRNA, complete cds, X77794 H. sapiens mRNA for cyclin G1, D89052 H. sapiens rRNA for proton-ATPase-like protein, complete cds, L26336 Heat Shock Protein, 70 KD (Gb:Y00371), M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, U72649 Human BTG2 (BTG2) ncRNA, complete cds, X74104 H. sapiens mRNA for TRAP beta subunit, M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, D15050 Human mRNA for transcription factor AREB6, complete cds, U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, U41766 Human metalloprotease/disintegrin/c- ysteine-rich protein precursor (MDC9) mRNA, c, AF006041 H. sapiens Fas-binding protein (DAXX) mRNA, partial cds, U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds, M60483

Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, U07664  
Human HB9 homeobox gene, exons 2 and 3 and complete cds, X52425 Human IL-4-R mRNA  
for the interleukin 4 receptor, X94563 H. sapiens dbi/acbp gene exon 1 & 2, L11066  
Human mRNA sequence, X74008 H. sapiens mRNA for protein phosphatase 1 gamma, X87241  
H. sapiens mRNA for hFat protein, S68616 Na+/H+ exchanger NHE-1 isoform [human,  
heart, mRNA, 4516 nt], D13705 Human mRNA for fatty acids omega-hydroxylase  
(cytochrome P-450Hkv), complete cds, D86966 Human mRNA for KIAA0211 gene, complete  
cds, U17327 Human neuronal nitric oxide synthase (NOS 1) mRNA, complete cds, U89336  
Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB,  
D85527 H. sapiens mRNA for LIM domain, partial cds, L07517 Mucin 6, Gastric  
(Gb:L07517), X64330 H. sapiens mRNA for ATP-citrate lyase, X89267 H. sapiens DNA for  
uroporphyrinogen decarboxylase gene, X91247 H. sapiens mRNA for thioredoxin  
reductase, L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete  
cds, X78992 H. sapiens ERF-2 mRNA, L19314 Human HRY gene, complete cds, X12794 Human  
v-erbA related ear-2 gene, L22005 Human ubiquitin conjugating enzyme mRNA, partial  
cds, U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, M34182 Human  
testis-specific protein kinase gamma-subunit mRNA, complete cds, L08246 Human  
myeloid cell differentiation protein (MCL1) mRNA, L37042 H. sapiens casein kinase I  
alpha isoform (CSNK1A1) mRNA, complete cds, D87071 Human mRNA for KIAA0233 gene,  
complete cds, S74017 Nrf2=NF-E2-like basic leucine zipper transcriptional activator  
[human, hemin-ind, L41351 H. sapiens prostasin mRNA, complete cds, L00352 Human low  
density lipoprotein receptor gene, exon 18, D50683 H. sapiens mRNA for TGF-betaII R  
alpha, complete cds, X89750 H. sapiens mRNA for TGIF protein, t D13988 Human rab GDI  
mRNA, complete cds, M12886 Human T-cell receptor active beta-chain mRNA, complete  
cds, M55265 Human casein kinase II alpha subunit mRNA, complete cds, J03161 Human  
serum response factor (SRF) mRNA, complete cds, M58286 H. sapiens tumor necrosis  
factor receptor mRNA, complete cds, U88629 Human RNA polymerase II elongation factor  
ELL2, complete cds, U90716 Human cell surface protein HCAR mRNA, complete cds,  
M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), U05875 Human  
clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, compl., M58603  
Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds,  
D87442 Human mRNA for KIAA0253 gene, partial cds, M76482 Human 130-kD pemphigus  
vulgaris antigen mRNA, complete cds, U56418 Human lysophosphatidic acid  
acyltransferase-beta mRNA, complete cds, J00120 Proto-Oncogene C-Myc, Alt. Splice 3,  
Orf 114, U88898 Human endogenous retroviral H protease/integrase-derived ORF1 mRNA,  
complete cds, M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, Z30643 H.  
sapiens mRNA for chloride channel (putative) 2139bp, X12953 Human rab2 mRNA,  
YPT1-related and member of ras family, D78129 H. sapiens mRNA for squalene  
epoxidase, partial cds, S78825 Id1, M54915 Human h-pim-1 protein (h-pim-1) mRNA,  
complete cds, X06323 Human MRL3 mRNA for ribosomal protein L3 homolog  
(MRL3=mammalian ribosome L, D14043 Human mRNA for MGC-24, complete cds, U34252 Human  
gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, M13829 Human putative raf  
related protein (pks/a-raf) mRNA, partial cds, U33821 Human tax1-binding protein  
TXBP151 mRNA, complete cds, U66616 Human SWI/SNF complex 170 KD subunit (BAF170)  
mRNA, complete cds, U29607 Human methionine aminopeptidase mRNA, complete cds,  
D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, D14874 H. sapiens  
mRNA for adrenomedullin precursor, complete cds, D85429 H. sapiens gene for heat  
shock protein 40, complete cds, t M69181 Human nonmuscle myosin heavy chain-B  
(MYH10) mRNA, partial cds, U60205 Human methyl sterol oxidase (ERG25) mRNA, complete  
cds, X75342 H. sapiens SHB mRNA, t D45906 H. sapiens mRNA for LIMK-2, complete cds,  
X59434 Human rohu mRNA for rhodanese, M96803 Human general beta-spectrin (SPTBN1)  
mRNA, complete cds, D79994 Human mRNA for KIAA0172 gene, partial cds, D86965 Human  
mRNA for KIAA0210 gene, complete cds, Y13647 Stearoyl-Coenzyme Desaturase, X52541  
Human mRNA for early growth response protein 1 (hEGR1), Z26317 H. sapiens mRNA for  
desmoglein 2, t M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds,  
L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, D87438 Human mRNA for  
KIAA0251 gene, partial cds, M31627 Human X box binding protein-1 (XBP-1) mRNA,  
complete cds, X80692 H. sapiens ERK3 mRNA, U37122 Human adducin gamma subunit mRNA,  
complete cds, M83667 Human NF-IL6-beta protein mRNA, complete cds, J05211  
Desmoplakin I, D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, X90858 H. sapiens  
mRNA for uridine phosphorylase, X76717 H. sapiens MT-11 mRNA, Y08915 H. sapiens mRNA  
for alpha 4 protein, U30999 Human (memc) mRNA, 3'UTR, L77886 Human protein tyrosine phosphatase  
(HU-PP-1) mRNA, partial sequence, U28480 Uncoupling Protein Ucp, X53586 Human mRNA for  
integrin alpha 6, M64347 Human novel growth factor receptor mRNA, 3' cds, U52100

Human XMP mRNA, complete cds, D21852 Human mRNA for KIAA0029 gene, partial cds, X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), D87462 Human mRNA for KIAA0272 gene, partial cds, L40391 H. sapiens (clone s153) mRNA fragment, D87469 Human mRNA for KIAA0279 gene, partial cds, S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, L19267 H. sapiens 59 protein mRNA, 3' end, M81601 Human transcription elongation factor (SII) mRNA, complete cds, X52611 Human mRNA for transcription factor AP-2, U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, U09587 Human glycyl-tRNA synthetase mRNA, complete cds, L37127 H. sapiens RNA polymerase II mRNA, complete cds, U52426 H. sapiens GOK (STIM1) mRNA, complete cds, U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, D90209 Human mRNA for DNA binding protein TAXREB67, D83777 Human mRNA for KIAA0193 gene, complete cds, U42031 Human 54 kD progesterone receptor-associated immunophilin FKBP54 mRNA, partial, M80244 Human E16 mRNA, complete cds, 134. D31883 Human mRNA for KIAA0059 gene, complete cds, J04444 Human cytochrome c-1 gene, complete cds, M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, M95787 Human 22 kD smooth muscle protein (SM22) mRNA, complete cds, U00968 Human SREBP-1 mRNA, complete cds, K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, X77366 H. sapiens HBZ17 mRNA, U53347 Human neutral amino acid transporter B mRNA, complete cds, X80695 H. sapiens OXA1Hs mRNA, J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, S75762 Oncogene T1s/Chop, Fusion Activated, U14550 Human sialyltransferase STHM (sthm) mRNA, complete cds, L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, X76534 H. sapiens NMB mRNA, M55268 Human casein kinase II alpha' subunit mRNA, complete cds, M27396 Human asparagine synthetase mRNA, complete cds, U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein, M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, X01630 Human mRNA for argininosuccinate synthetase. This group of ultraviolet radiation-regulated polynucleotides is hereinafter referred to as the "repressed response group" of ultraviolet radiation-regulated polynucleotides.

Summary of Invention Paragraph (34):

[0030] The third response group of this embodiment comprises at least one polynucleotide that is at least 90% identical to a nucleic acid molecule selected from the group consisting of: M20030 Human small proline rich protein (sprII) mRNA, clone 930, X53065, M13903 Human involucrin gene, exon 2, M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, L10343 Huma elafin gene, complete cds, M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, M21302 Human small proline rich protein (sprII) mRNA, clone 174N, Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), X57985 H. sapiens genes for histones H2B.1 and H2A, L05188 H. sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, X70326 Macmarcks, X67325 H. sapiens p27 mRNA, L19779 H. sapiens histone H2A.2 mRNA, complete cds, S81914 IEX-1-radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, Z22548 H. sapiens thiol-specific antioxidant protein mRNA, M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, X06956 Tubulin, Alpha 1, Isoform 44, V00594 Human mRNA for metallothionein from cadmium-treated cells, M80254 H. sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, X99920 H. sapiens mRNA for S100 calcium-binding protein A13, U62800 Human cystatin M (CST6) mRNA, complete cds, L08069 Human heat shock protein, E. coli DnaJ homolog mRNA, complete cds, L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, M13755 Human interferon-induced 17-kD/15-kD protein mRNA, complete cds, M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, AF001294 H. sapiens IPL (IPL) mRNA, complete cds, X54489 Human gene for melanoma growth stimulatory activity (MGSA), M21186 Human neutrophil cytochrome

b light chain p22 phagocyte b-cytochrome mRNA, compl, D42040 Human mRNA for KIAA9001 gene, complete cds, V00599 Tubulin, Beta, U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, M37583 Human histone (H2A.Z) mRNA, complete cds, Z49989 H. sapiens mRNA for smoothelin, L24564 Human Rad mRNA, complete cds, D49824 Human HLA-B null allele mRNA, M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], Z49254 H. sapiens L23-related mRNA, M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splic, U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homolog, D86974 Human mRNA for KIAA0220 gene, partial cds, M72885 Human GOS2 gene, 5' flank and cds, S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, X04654 Human mRNA for U1 RNA-associated 70K protein, t M26311 Human cystic fibrosis antigen mRNA, complete cds, X14850 Human H2A.X mRNA encoding histone H2A.X, M14328 Human alpha enolase mRNA, complete cds, U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, M28130 Human interleukin 8 (IL8) gene, complete cds, Z21507 H. sapiens EF-1delta gene encoding human elongation factor-1-delta, M92934 Human connective tissue growth factor, complete cds, M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, X57351 Human 1-8D gene from interferon-inducible gene family, X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, Y00503 Human mRNA for keratin 19. M57731 Human gro-beta mRNA, complete cds, D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, U52101 Human YMP mRNA, complete cds. D13413 Human mRNA for tumor-associated 120 kD nuclear protein p120, partial cds(carbox, L42379 H. sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, X52426 H. sapiens mRNA for cytokeratin 13, J04456 Human 14 kD lectin mRNA, complete cds, S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, U26727 Human p16INK4/MTS1 mRNA, complete cds, X92896 H. sapiens mRNA for ITBA2 protein, Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genome, M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, U09937 Human urokinase-type plasminogen receptor, exon 7, X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, X82693 H. sapiens mRNA for E48 antigen, M58026 Human NB-1 mRNA, complete cds, M90657 Human tumor antigen (L6) mRNA, complete cds, X57579 H. sapiens activin beta-A subunit (exon 2), D38251 Human mRNA for RPB5 (XAP4), complete cds, D89667 H. sapiens mRNA for c-myc binding protein, complete cds, AB000584 H. sapiens mRNA for TGF-beta superfamily protein, complete cds, L76200 Human guanylate kinase (GUKI) mRNA, complete cds, J04794 Human aldehyde reductase mRNA, complete cds, X52882 Human t-complex polypeptide 1 gene, M79463 Human PML-2 mRNA, complete CDS, Y09022 H. sapiens mRNA for Not56-like protein, M12529 Human apolipoprotein E mRNA, complete cds, X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, X83416 H. sapiens PrP gene, exon 2, D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, M16364 Human creatine kinase-B mRNA, complete cds, D38305 Human mRNA for Tob, complete cds, X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), Z29505 H. sapiens mRNA for nucleic acid binding protein sub2.3, K02574, U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, X67951 H. sapiens mRNA for proliferation-associated gene (pag), J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, U09578 H. sapiens MAPKAP kinase (3pK) mRNA, complete cds, X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), V00599 Tubulin, Beta 2, U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), U90546 Human butyrophilin (BTf4) mRNA, complete cds, M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kD subunit, X77794 H. sapiens mRNA for cyclin GI, M29064 Human hnRNP B1 protein mRNA, D21853 Human mRNA for KIAA0111 gene, complete cds, X78687 H. sapiens G9 gene encoding

sialidase, X15729 Human mRNA for nuclear p68 protein, X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, L40391 H. sapiens (clone s153) mRNA fragment, D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, X74104 H. sapiens mRNA for TRAP beta subunit, M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, L37127 H. sapiens RNA polymerase II mRNA, complete cds, M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete eds, U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, X53586 Human mRNA for integrin alpha 6, t D21852 Human mRNA for KIAA0029 gene, partial cds, L11066 Human mRNA sequence, J04444 Human cytochrome c-1 gene, complete cds, M95787 Human 22 kD smooth muscle protein (SM22) mRNA, complete cds, L07517 Mucin 6, Gastric (Gb:L07517), X91247 H. sapiens mRNA for thioredoxin reductase, L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, U30999 Human (memc) mRNA, 3'UTR, U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, U28480 Uncoupling Protein Ucp, X12794 Human v-erbA related ear-2 gene, L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, M12886 Human T-cell receptor active beta-chain mRNA, complete cds, Y08915 H. sapiens mRNA for alpha 4 protein, M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), X76717 H. sapiens MT-11 mRNA, M64347 Human novel growth factor receptor mRNA, 3' cds, X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), D87469 Human mRNA for KIAA0279 gene, partial cds, M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, X06323 Human MRL3 mRNA for ribosomal protein L3 homolog (MRL3=mammalian ribosome L, X78992 H. sapiens ERF-2 mRNA, L41351 H. sapiens prostasin mRNA, complete cds, X75342 H. sapiens SHB mRNA, U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, U88629 Human RNA polymerase II elongation factor ELL2, complete cds, S78825 Id1, U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, D78129 H. sapiens mRNA for squalene epoxidase, partial cds, D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, Z26317 H. sapiens mRNA for desmoglein 2, L19267 H. sapiens 59 protein mRNA, 3' end, J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, U52100 Human XMP mRNA, complete cds, L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, U52426 H. sapiens GOK (STIM1) mRNA, complete cds, M80244 Human E16 mRNA, complete cds, U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, L77886 Human protein tyrosine phosphatase mRNA, complete cds, M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, X89750 H. sapiens mRNA for TGIF protein, D85429 H. sapiens gene for heat shock protein 40, complete cds, J05211 Desmoplakin 1, M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, X80695 H. sapiens OXA1Hs mRNA, M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, D83777 Human mRNA for KIAA0193 gene, complete cds, D31883 Human mRNA for KIAA0059 gene, complete cds, U00968 Human SREBP-1 mRNA, complete cds, K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, D86965 Human mRNA for KIAA0210 gene, complete cds, Z30643 H. sapiens mRNA for chloride channel (putative) 2139 bp, D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, D87462 Human mRNA for KIAA0272 gene, partial cds, X80692 H. sapiens ERK3 mRNA, X90858 H. sapiens mRNA for uridine phosphorylase, M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, M81601 Human transcription elongation factor (SII) mRNA, complete cds, X52611 Human mRNA for transcription factor AP-2, U09587 Human glycyl-tRNA synthetase mRNA, complete cds, U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, D90209 Human mRNA for DNA binding protein TAXREB67, X77366 H. sapiens HBZ17 mRNA, X76534 H. sapiens NMB mRNA, U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, M83667 Human NF-IL6-beta protein mRNA, complete cds, U53347 Human neutral amino acid transporter B mRNA, complete cds, L09229 Human long-chain acyl-coenzyme A synthetase (FACLI) mRNA, complete cds, S73591 brain-expressed HHCNA78 homolog [human, HL-60 acute promyelocytic leukemia cells, M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, M55268 Human casein kinase II alpha' subunit mRNA, complete cds, M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, U42031 Human 54 kD progesterone

receptor-associated immunophilin FKBP54 mRNA, partial, M27396 Human asparagine synthetase mRNA, complete cds, X01630 Human mRNA for argininosuccinate synthetase, D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein.

Detail Description Table CWU (12):

c-myc binding protein, complete cds. 1 1 1 3 1 1 2 1.1 3.1 4.2 AB000584\_at AB000584  
 H. sapiens mRNA for GF/cyt 9.2 TGF-beta superfamily protein, complete cds. 2.4 1.4  
 1.3 5.1 1.5 1.1 2.6 2.6 1.6 4.2 L76200\_at L76200 Human guanylate DNA rep. 11.9  
 kinase (GUK1) mRNA, complete cds. 1.2 1 1 3.2 1.5 1.2 2.7 3.1 1.1 4.2 J04794\_at  
 J04794 Human aldehyde detox 10.1 reductase mRNA, complete cds. 1.4 1.1 1.1 3.6 1.4  
 -1 0.2 1.3 2.8 4.1 X52882\_at X52882 Human t-complex Cell surface/adhesion 7.9  
 polypeptide 1 gene. 1.5 1.8 2.1 5.4 -1 -1 -2 1.6 2.5 4.1 M79463\_s\_at M79463 Human  
 PML-2 TF 7.5 mRNA, complete cds. 1 -1.1 -1 -1.2 1.7 2 3.7 1.6 2.5 4.1 Y09022\_at  
 Y09022 H. sapiens mRNA ER/vesicles/lysosome 6.6 tenuous function!! for Not56-Iike  
 protein. 1.7 1.3 -1 2 1.7 -1 0.6 2.9 1.2 4.1 M12529\_at M12529 Human GF/cyt 6.7  
 apolipoprotein E mRNA, complete cds. 1.2 1.1 -2 0.8 1.9 -1 0.5 2.9 1.2 4.1 X71129\_at  
 X71129 H. sapiens mRNA Mit. 5.4 for electron transfer flavoprotein beta subunit. 1.2  
 1.2 1.9 4.3 -1 -2.5 1.1 2.9 4 X83416\_s\_at X83416 H. sapiens PrP cytoskel. 5.8  
 prion protein gene, exon 2. -1 -2.6 -1 -4.7 1.4 2 3.4 1.4 2.6 4 D89052\_at D89052 H.  
 sapiens mRNA for Energy 2.7 proton-ATPase-like protein, complete cds. 1.6 1.5 2.6  
 5.7 3.1 1.6 4.7 1.5 2.5 4 M60974\_s\_at M60974 Human growth DNA rep. 14.4 arrest and  
 DNA-damage-inducible protein (gadd45) mRNA, complete cds 1 1 1 3 1 1 2 3 1 4  
 M16364\_s\_at M16364 Human Energy 9 energy recruitment, creatine kinase-B mRNA,  
 complete cds. ATP synth. 1.6 1.4 1.6 4.6 2 -1 0.8 1.2 2.7 3.9 D38305\_at D38305 Human  
 mRNA for signaling 9.3 Tob, complete cds. 1.4 1.5 1.3 4.2 1 -1 0 1.2 2.7 3.9  
 HG2917-HT3061\_f\_at X87679 Major Cell surface/adhesion 8.1 Histocompatibility  
 Complex, Class I, E (Gb: M21533) 1.4 1.3 1.4 4.1 -1.1 -1 -2.2 1.2 2.7 3.9 Z29505\_at  
 Z29505 H. sapiens mRNA RNA processing 5.8 for nucleic acid binding protein sub2.3  
 1.1 1 -1 1 1.2 1.1 2.3 1.3 2.6 3.9 K02574\_at K02574 7.2 1.5 1 1.1 3.6 1 -1 -0.2 2.6  
 1.3 3.9 U09813\_at U09813 Human Mit. 7.3 mitochondrial ATP synthase subunit 9, P3  
 gene copy, mRNA, nuclear gene enc 1.5 1.5 1.3 4.3 -1.1 -1 -2.1 2.6 1.3 3.9 X67951\_at  
 X67951 H. sapiens mRNA for detox 6.1 antioxidant protein proliferation-associated  
 gene (pag). 1.8 1.2 1 4 1.7 1.2 2.9 2.5 1.4 3.9 J04611\_at J04611 Human lupus p70  
 (Ku) TF 10.8 autoantigen protein mRNA, complete cds. 2.8 1.8 2 6.6 1.6 -1 0.6 2.8 1  
 3.8 U09578\_at U09578 H. sapiens MAPKAP signaling 11 kinase (3pK) mRNA, complete cds.  
 1 1 1 3 3.4 3.8 7.2 1 2.7 3.7 X53800\_s\_at X53800 Human mRNA GF/cyt 13.9 for  
 macrophage inflammatory protein- 2beta (MIP2beta). 1 1.3 1.4 3.7 1 1.3 2.3 1.1 2.6  
 3.7 HG1980-HT2023\_at V00599 Tubulin, Beta 2 cytoskel. 9.7 1.6 -0 1.6 3.18 -1 1.7 0.7  
 2.5 1.2 3.7 U69126\_s\_at U69126 Human FUSE binding TF 7.58 protein 2 (FBP2) mRNA,  
 partial cds. 1.6 1.5 1.5 4.6 1 -1 0 2.7 1 3.7 X53416\_at X53416 Human mRNA for  
 cytoskel. 8.3 actin-binding protein (filamin) (ABP-280). 1 1 1 3 1 1 2 1 2.6 3.6  
 U90546\_r\_at U90546 Human integral membrane 8.6 membrane butyrophilin (BTf4) mRNA,  
 complete cds. protein glycoprotein 2.6 1.9 1.8 6.3 1.3 1.1 2.4 4.2 -1 3.2 M58459\_at  
 M58459 Human ribosomal protein Translation 11.9 (RPS4Y) isoform mRNA, complete cds.  
 2.6 1.7 1 5.3 1.2 1.3 2.5 3.1 -1 2.1 M19961\_at M19961 Human Mit. 9.9 cytochrome c  
 oxidase subunit Vb (coxVb) mRNA, complete cds. 2.8 2 2 6.8 1.4 1 2.4 3 -1 2  
 U65579\_at U65579 Human Mit. 11.2 mitochondrial NADH dehydrogenase- ubiquinone Fe--S  
 protein 8, 23 kD subunit 2.2 1.4 1.5 5.1 -2.4 -5 -7.1 -1 3.2 1.9 X77794\_at X77794 H.  
 sapiens mRNA for cyclin 61. Cell cycle -0.1 1.8 1.5 1.2 4.5 1.4 -1 0.3 2.7 -1 1.7  
 M29064\_at M29064 Human hnRNP RNA processing 6.5 B1 protein mRNA. 1.3 1 -1 1.2 1 -1  
 -0.2 -1 2.7 1.6 D21853\_at D21853 Human mRNA for Translation 2.6 translation  
 initiation KIAA0111 gene, complete cds. -1.1 -1.4 -1 -3.9 1.4 1.7 3.1 -1 2.7 1.5  
 X78687\_at X78687 H. sapiens G9 Cell surface/adhesion 0.7 Glucoproteins, cell gene  
 encoding sialidase. surface 1.6 -1.1 1.2 1.7 1.1 -2 -0.4 -1 2.6 1.5 X15729\_s\_at  
 X15729 Human mRNA TF 2.8 for nuclear p68 protein. 1.2 1 1.2 3.4 -1 -1 -2 3.1 -1.6  
 1.5 X04828\_at X04828 Human mRNA for signaling 2.9 G(i) protein alpha-subunit  
 (adenylate cyclase inhibiting GTP-bind 1.1 1.2 -1 1.2 -1.3 -2 -2.8 2.6 -1.3 1.3  
 L27943\_at L27943 H. sapiens cytidine DNA rep. -0.3 deaminase (CDA) mRNA, complete  
 cds. 1.4 -1.5 -2 -1.9 1.1 -1 -0.3 1.9 -2.8 -0.9 L40391\_at L40391 H. sapiens (clone  
 -3.1 s153) mRNA fragment. 1.3 1 1.4 3.7 1.3 1.1 2.4 1.5 -2.5 -1 D42123\_at D42123 H.  
 sapiens mRNA signaling 5.1 cytoskel. LIM for ESP1/CRP2, complete cds. domain 1 1.1  
 -1 1.1 1.1 -1 0 -3 1.4 -1.2 X74104\_at X74104 H. sapiens mRNA ER/vesicles/lysosome

-0.1 ER, translocon- for TRAP beta subunit. associated protein 1.3 -1 1 1.3 -1.1 -2  
-3.1 -3 1.4 -1.2 M84332\_at M84332 Human ADP- signaling -3 ribosylation factor 1  
gene, exons 2-5. 1 1 1 3 1.8 -2 -0.1 1.9 -3.1 -1.2 L37127\_at L37127 H. sapiens RNA  
TF 1.7 polymerase II mRNA, complete cds. 1.4 2.8 3.6 7.8 1.2 -3 -1.7 -3 1.4 -1.4  
M92843\_s\_at M92843 H. sapiens zinc finger TF 4.7 transcriptional regulator mRNA,  
complete cds. -1.8 -2.5 -2 -5.9 1 -1 -0.2 -3 1.2 -1.6 U07664\_at U07664 Human HB9  
homeobox TF -7.7 gene, exons 2 and 3 and complete cds. -1.6 -2.2 -2 -5.3 1 1.7 2.7  
1.4 -3 -1.6 L48546\_at L48546 H. sapiens tuberin signaling -4.2 GAP (TSC2) gene,  
exons 38, 39, 40 and 41. 1.8 1.4 1.4 4.6 -1.4 -2 -3.4 1 -2.7 -1.7 X53586\_rna1\_at  
X53586 Human cytoskel. -0.5 ECM mRNA for Integrin alpha 6. 1.5 1 -1 1.2 1.4 1.1 2.5  
1 -2.8 -1.8 D21852\_at D21852 Human mRNA for 1.9 KIAA0029 gene, partial cds. 1.1 1.1  
1.1 3.3 -1.1 1.1 0 -3 1 -1.9 L11066\_at L11066 Human mRNA sequence. signaling 1.4  
HSP-associated 4.3 2.9 1.6 8.8 1.6 1.3 2.9 1.7 -3.6 -1.9 J04444\_at J04444 Human Mit.  
9.8 cytochrome c-1 gene, complete cds. 1.6 1 1 3.6 -1.6 -2 -4 1.2 -3.7 -2.5  
M95787\_at M95787 Human 22 kD cytoskel. -2.9 transgelin smooth muscle protein (SM22)  
mRNA, complete cds. -5.6 -4.5 -1 -11.4 1.3 1 2.3 -5 1 -3.5 HG880-HT880\_at L07517  
Mucin 6, -12.6 Gastric (Gb: L07517) -1 -1 -1 -3 1 -3 -1.9 -3 -1 -3.5 X91247\_at  
X91247 H. sapiens mRNA detox -8.4 for thioredoxin reductase. -1.4 -1.3 -2 -4.2 -1.7  
-2 -3.3 -3 -1 -3.5 L11672\_at L11672 Human Kruppel TF -11 related zinc finger protein  
(HTF10) mRNA, complete cds. 1.1 -1.1 -2 -1.8 1.1 -1 -0.1 -1 -2.6 -3.6 U30999\_at  
U30999 Human (memc) mRNA, 3UTR. -5.5 1.2 -1.1 -1 -0.9 -1 -1 -2.2 -3 -1.1 -3.7  
U01337\_at U01337 Human Ser/Thr protein signaling -6.8 kinase (A-RAF-1) gene,  
complete cds. -1.8 -2.7 -2 -6.3 -1.5 -1 -2.8 -1 -2.6 -3.7 HG3492-HT3686\_at U28480  
Mit. -12.8 thermogenic Uncoupling Protein Ucp 1.2 1 1.3 3.5 -1.6 -2 -3.5 -3 -1.1  
-3.9 X12794\_at X12794 Human v-erbA signaling -3.9 related ear-2 gene. 1.1 1.2 -2 0.6  
1.1 -2 -0.8 -3 -1.1 -3.9 L22005\_at L22005 Human ubiquitin protease -4.1 protease  
conjugating enzyme mRNA, partial cds. -1.7 -1.7 -2 -5.1 -1 -1 -2.3 -3 -1.2 -3.9  
M12886\_at M12886 Human T-cell receptor signaling -11.3 active beta-chain mRNA,  
complete cds. 1.5 1.7 1.4 4.6 1 -1 -0.3 -1 -2.6 -4 Y08915\_at Y08915 H. sapiens mRNA  
signaling 0.3 for alpha 4 protein. 1.3 1.1 1.1 3.5 -1.4 -2 -3.2 -3 -1.3 -4.1  
HG3638-HT3849\_s\_at M24547 ECM -3.8 ECM Amyloid Beta (A4) Precursor Protein, Alt.  
Splice 2, A4(751) 1 1 -1 0.9 -1.3 -1 -2.4 -2 -2.5 -4.1 X76717\_at X76717 H. sapiens  
MT-11 mRNA. detox -5.6 1.6 1.4 1.3 4.3 1.1 -2 -1 -1 -2.7 -4.1 M64347\_at M64347 Human  
novel signaling -0.8 growth factor receptor mRNA, 3' cds. 1.4 1.2 1 3.6 1.2 -1 -0.1  
-1 -2.8 -4.1 X05409\_at X05409 Human RNA for Mit. -0.6 mitochondrial aldehyde  
dehydrogenase I ALDH I (EC 1.2.1.3). -1.1 -1.4 -2 -4.1 1.3 -1 -0.1 -1 -2.8 -4.1  
D87469\_at D87469 Human mRNA for Cell surface/adhesion -8.3 seven-pass KIAA0279 gene,  
partial cds. transmembrane cadherin -1.2 -1.3 -1 -3.7 -1 -2 -2.5 -3 -1.3 -4.2  
M58603\_at M58603 Human nuclear TF -10.4 factor kappa-B DNA binding subunit  
(NF-kappa-B) mRNA, complete cds -1 -1.3 -1 -3.7 -1.5 -3 -4 -3 -1.3 -4.2 M76482\_at  
M76482 Human 130-kD cytoskel. -11.9 pemphigus vulgaris antigen mRNA, complete cds.  
1.3 -1 -1 1.4 -1 0.4 -3 -1.6 -4.2 X06323\_at X06323 Human MRL3 Translation -4.8  
mRNA for ribosomal protein L3 homolog (MRL3 = mammalian ribosome L -1.2 -1.2 -2 -4.1  
-1.3 -4 -5.2 -3 -1 -4.3 X78992\_at X78992 H. sapiens ERF-2 mRNA. TF -13.6 1.8 1 -1  
1.7 1 -2 -1 -3 -1.2 -4.3 L41351\_at L41351 H. sapiens protease -3.6 secreted protease  
prostasin mRNA, complete cds. 1.1 1.1 1.3 3.5 -1.5 -2 -3 -3 -1.9 -4.4 X75342\_at  
X75342 H. sapiens SHB mRNA. signaling -3.9 SH2 prot. 1.1 1 1 3.1 -1.2 -2 -2.9 -1  
-3.3 -4.4 U83115\_at U83115 Human non-lens cytoskel. -4.2 beta gamma-crystallin like  
protein

Detail Description Table CWU (17):

9TABLE 9 Ultraviolet Radiation-Regulated Repressed Gene Set Repressed Gene Set  
D50840\_at D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds.  
L08069\_at L08069 Human heat shock protein, E. coli DnaJ homolog mRNA, complete cds.  
X77794\_at X77794 H. sapiens mRNA for cyclin G1. D89052\_at D89052 H. sapiens mRNA for  
proton-ATPase-like protein, complete cds. HG2855-HT2995\_at L26336 Heat Shock  
Protein, 70 KD (Gb:Y00371) M30703\_s\_at M30703 Human amphiregulin (AR) gene, exon 6,  
clones lambda-ARH (6, 12). L16862\_at L16862 H. sapiens G protein-coupled receptor  
kinase (GRK6) mRNA, complete cds M92843\_s\_at M92843 H. sapiens zinc finger  
transcriptional regulator mRNA, complete cds. U72649\_at U72649 Human BTG2 (BTG2)  
mRNA, complete cds. X74104\_at X74104 H. sapiens mRNA tor TRAP beta subunit.  
M84332\_at M84332 Human ADP-ribosylation factor 1 gene, exons 2-5. D15050\_at D15050  
Human mRNA for transcription factor AREB6, complete cds. U28386\_at U28386 Human  
nuclear localization sequence receptor hSRP1alpha mRNA, complete cds. U41766\_s\_at  
U41766 Human metalloprotease/ disintegrinlcysteine-rich protein precursor (M009)

mRNA, c AF006041\_at AF006041 H. sapiens Fas-binding protein (DAXX) mRNA, partial cds. U28749\_s\_at U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds. M60483\_rnal\_s\_at M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds. U07664\_at U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds. X52425\_at X52425 Human IL-4-R mRNA for the interleukin 4 receptor. X94563\_xpt2\_rat X94563 H. sapiens dbi/acbp gene exon 1 & 2. L11066\_at L11066 Human mRNA sequence. X74008\_at X74008 H. sapens mRNA for protein phosphatase 1 gamma. X87241\_at X87241 H. sapiens mRNA for hFAT protein. S68616\_at S68616 Na+/H+ exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt]. D13705\_s\_at D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450HVK), complete cds D86966\_at D86966 Human mRNA for KIAA0211 gene, complete cds. U17327\_at U17327 Human neuronal nitric oxide synthase (NOS1) mRNA, complete cds. U89336\_cds4\_at U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB D85527\_at D85527 H. sapiens mRNA for LIM domain, partial cds. HG880-HT880\_at L07517 Mucin 6, Gastric (Gb:L07517) X64330\_at X64330 H. sapiens mRNA for ATP-citrate lyase.

X89267\_at X89267 H. sapiens DNA for uroporphyrinogen decarboxylase gene. X91247\_at X91247 H. sapiens mRNA for thioredoxin reductase. L11672\_at L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds. X78992\_at X78992 H. sapiens ERF-2 mRNA. L19314\_at L19314 Human HRY gene, complete cds. X12794\_at X12794 Human v-erbA related ear-2 gene. L22005\_at L22005 Human ubiquitin conjugating enzyme mRNA, partial cds. U01337\_at U01337 Human Ser, Thr protein kinase (A-RAF-1) gene, complete cds. M34182\_at M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds. L08246\_at L08246 Human myeloid cell differentiation protein (MCL1) mRNA. L37042\_at L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds. D87071\_at D87071 Human mRNA for KIAA0233 gene, complete cds. S74017\_at S74017 Nrf2 = NF-E2-like basic leucine zipper transciptional activator [human, hemin-ind L41351\_at L41351 H. sapiens prostasin mRNA, complete cds. L00352\_at L00352 Human low density lipoprotein receptor gene, exon 18. D50683\_at D50683 H. sapiens mRNA for TGF-beta1R alpha, complete cds. X89750\_at X89750 H. sapiens mRNA for TGIF protein. D13988\_at D13988 Human rab GDI mRNA, complete cds. M12886\_at M12886 Human T-cell receptor active beta-chain mRNA, complete cds. M55265\_at M55265 Human casein kinase II alpha subunit mRNA, complete cds. J03161\_at J03161 Human serum response factor (SRF) mRNA, complete cds. M58286\_s\_at M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds. U88629\_at U88629 Human RNA polymerase II elongation factor ELL2, complete cds. U90716\_at U90716 Human cell surface protein HCAR mRNA, complete cds. HG3638-HT3849\_s\_at M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751) U05875\_at U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, compl M58603\_at M58603 Human nuclear factor kappa-B DNA binding subunit (NE-kappa-B) mRNA, complete cds D87442\_at D87442 Human mRNA for KIAA0253 gene, partial cds. M76482\_at M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds. U56418\_at U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds. HG3523-HT4899\_s\_at J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114 U88898\_at U88898 Human endogenous retroviral H protease/integrase-derived ORF1 mRNA, complete cds M91083\_at M91083 Human DNA-binding protein (HRC1) mRNA, complete cds. Z30643\_at Z30643 H. sapiens mRNA for chloride channel (putative) 2139 bp. X12953\_at X12953 Human rab2 mRNA, YPT1-related and member of ras family.

D78129\_at D78129 H. sapiens mRNA for squalene epoxidase, partial cds.

HG3342-HT3519\_s\_at S78825 ldi M54915\_s\_at M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds. X06323\_at X06323 Human MRL3 mRNA for ribosomal protein L3 homolog ( MRL3 = mammalian ribosome L D14043\_at D14043 Human mRNA for MGC-24, complete cds. U34252\_at U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds. M13829\_s\_at M13829 Human putative rat related protein (pks/a-raf) mRNA, partial cds. U33821\_at U33821 Human taxi-binding protein TXBP151 mRNA, complete cds. U66616\_at U66616 Human SWI/SNE complex 170 KD subunit (BAE170) mRNA, complete cds U29607\_at U29607 Human methionine aminopeptidase mRNA, complete cds. D14520\_at D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds.

D14874\_at D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds.

D85429\_at D85429 H. sapiens gene for heat shock protein 40, complete cds. M69181\_at M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds. U60205\_at U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds. X75342\_at X75342 H. sapiens SHB mRNA. D45906\_at D45906 H. sapiens mRNA for LIMK-2, complete cds.

X59434\_at X59434 Human rohu mRNA for rhodanese. M96803\_at M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds. D79994\_at D79994 Human mRNA for KIAA0172 gene, partial cds. D86965\_at D86965 Human mRNA for KIAA0210 gene, complete cds.

HG3930-HT4200\_at Y13647 Stearoyl-Coenzyme A Desaturase X52541\_at X52541 Human mRNA

for early growth response protein 1 (hEGR1). Z26317\_at Z26317 H. sapiens mRNA for desmoglein 2. M57763\_at M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds. L38490\_s\_at L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds. D87438\_at D87438 Human mRNA for KIAA0251 gene, partial cds. M31627\_at M31627 Human X box binding protein-1 (XPB-1) mRNA, complete cds. X80692\_at X80692 H. sapiens ERK3 mRNA. U37122\_at U37122 Human adducin gamma subunit mRNA, complete cds. M83667\_rnal\_s\_at M83667 Human NF-IL6-beta protein mRNA, complete cds. HG174-HT174\_at J05211 Desmoplakin I D42123\_at D42123 H. sapiens mRNA for ESP1/CRP2,

## CLAIMS:

19. The method according to claim 1, wherein: (a) the first response further comprises altered expression of at least three nucleic acid molecules, each one being at least 90% identical to a polynucleotide selected from the group consisting of: (i) M62831 Human transcription factor ETR101 mRNA, complete cds, (ii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (iii) L04731 H. sapiens translocation T(4:11) of ALL-1 gene to chromosome 4, (iv) X56681 Human junD mRNA, (v) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (vi) L38951 H. sapiens importin beta subunit mRNA, complete cds, (vii) D87071 Human mRNA for KIAA0233 gene, complete cds, (viii) M72885 Human GOS2 gene, 5' flank and cds, (ix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (x) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, (xi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (xii) D86988 Human mRNA for KIAA0221 gene, complete cds, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) U62317 Chromosome 22q13 BAC Clone CIT987SK-384D8 complete sequence, (xv) X04412 Human mRNA for plasma gelsolin, (xvi) L27706 Human chaperonin protein (Tcp20) gene complete cds, (xvii) X61123 Human BTG1 mRNA, (xviii) M60974growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xix) L19437 Human transaldolase mRNA containing transposable element, complete cds, (xx) X57985 H. sapiens genes for histones H2B.1 and H2A, (xxi) D90086 Human pyruvate dehydrogenase (EC 1.2.4.1) beta subunit gene, exons 1 - 10, (xxii) M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, (xxiii) L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, (xxiv) D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450 HKV), complete cd, (xxv) U37122 Human adducin gamma subunit mRNA, complete cds, (xxvi) D45906 H. sapiens mRNA for LIMK-2, complete cds, (xxvii) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (xxviii) D87438 Human mRNA for KIAA0251 gene, partial cds, (xxix) L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, (xxx) D14043 Human mRNA for MGC-24, complete cds, (xxxii) D13988 Human rab GDI mRNA, complete cds, (xxxiii) U28480 Uncoupling Protein Uc, (xxxiv) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (xxxv) M55265 Human casein kinase II alpha subunit mRNA, complete cds, (xxxv) M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, (xxxvi) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox P, (xxxvii) D87442 Human mRNA for KIAA023 gene, partial cds, (xxxviii) J03161 Human serum response factor (SRF) mRNA, complete cds, (xxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (xl) U17327 Human neuronal nitric oxide synthase (NOS 1) mRNA, complete cds, (xli) D86966 Human mRNA for KIAA0211 gene, complete cds, (xlii) D85527 H. sapiens mRNA for LIM domain, partial cds, (xliii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (xliv) X59434 Human rohu mRNA for rhodanese, (xlv) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, and (xlvi) J05211 Desmoplakin; (b) the second response further comprises altered expression of at least three nucleic acid molecules, each one being at least 90% identical to a polynucleotide selected from the group consisting of: (i) M57731 Human gro-beta mRNA, complete cds, (ii) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (iii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (iv) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (v) M72885 Human GOS2 gene, 5' flank and cds, (vi) M62831 Human transcription factor ETR101 mRNA, complete cds, (vii) M28130 Human interleukin 8 (IL8) gene, complete cds, (viii) X57985 H. sapiens genes for histones H2B.1 and H2A, (ix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (x) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xi) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xii) X56681 Human junD mRNA, (xiii) S75762 Oncogene Tls/Chop, Fusion Activate, (xiv) M84739 Human autoantigen calreticulin mRNA, complete cds, (xv) M21302 Human small proline rich protein

(sprII) mRNA, clone 174N, (xvi) V00599 Tubulin, Bet, (xvii) X70326 Macmarck, (xviii) D10923 Human mRNA for HM74, (xix) D64142 Human mRNA for histone H1.times., complete cds, (xx) D86974 Human mRNA for KIAA0220 gene, partial cds, (xxi) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xxii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (xxiii) L13391 Human helix-loop-helix basic phosphoprotein (GOS8) gene, complete cds, (xxiv) M31627 Human X box binding protein-I (XBP-1) mRNA, complete cds, (xxv) U40369 Human spermidine/spermine N1-acetyltransferase (SSAT) gene, complete cds, (xxvi) X52560 Nuclear Factor Nf-IL, (xxvii) X61123 Human BTG I mRNA, (xxviii) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (xxix) U35048 Human TSC-22 protein mRNA, complete cds, (xxx) M69043 H. sapiens MAD-3 mRNA encoding IkB-like activity, complete cds, (xxxi) X51345 Human jun-B mRNA for JUN-B protein, (xxxii) S68616 Na+/H+ exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], (xxxiii) X89750 H. sapiens mRNA for TGIF protein, (xxxiv) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein, (xxxv) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (xxxvi) X52541 Human mRNA for early growth response protein 1 (hEGR1), (xxxvii) D50683 H. sapiens mRNA for TGF-betaIIR alpha, complete cds, (xxxviii) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (xxxix) X91247 H. sapiens mRNA for thioredoxin reductase, (xl) U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, comp, (xli) L19314 Human HRY gene, complete cds, (xlii) M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), (xliii) U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, (xliv) S78825 Id1, (xlv) D85429 H. sapiens gene for heat shock protein 40, complete cds, (xlvi) U41766 Human metalloprotease/disintegrin/cystein- e-rich protein precursor (MDC9) mRNA, (xlvii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, (xlviii) M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, (xlix) D15050 Human mRNA for transcription factor AREB6, complete cds, U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, (li) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (lii) X64330 H. sapiens mRNA for ATP-citrate lyase, (liii) U37122 Human adducin gamma subunit mRNA, complete cds, (liv) X74008 H. sapiens mRNA for protein phosphatase 1 gamma, (lv) U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, (lvi) X76534 H. sapiens NMB mRNA, (lvii) D87071 Human mRNA for KIAA0233 gene, complete cds, (lviii) U90716 Human cell surface protein HCAR mRNA, complete cds, (lix) M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, (lx) U29607 Human methionine aminopeptidase mRNA, complete cds, (lxi) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (lxii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (lxiii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (lxiv) X12953 Human rab2 mRNA, YPT1-related and member of ras family, (lxv) M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, (lxvi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (lxvii) D 14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (lxviii) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (lxix) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (lxxi) S74017 Nrf2=NF-E2-like basic leucine zipper transcriptional activator [human, hemin-in, (lxxii) X87241 H. sapiens mRNA for hFat protein, (lxxiii) X52425 Human IL-4-R mRNA for the interleukin 4 receptor, (lxxiv) D79994 Human mRNA for KIAA0172 gene, partial cds, (lxxv) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (lxxvi) M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, (lxxvii) X78992 H. sapiens ERF-2 mRNA, (lxxviii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (lxxix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (lxxx) X52611 Human mRNA for transcription factor AP-2, (lxxxii) U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds, (lxxxiii) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (lxxxvii) L26336 Heat Shock Protein, 70 Kda (Gb:Y00371, (lxxxiv) L08246 Human myeloid cell differentiation protein (MCL1) mRNA, (lxxxv) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic, leukemia cells (lxxxvi) J05211 Desmoplakin, (lxxxvii) L00352 Human low density lipoprotein receptor gene, exon 18, (lxxxviii) Y13647 Stearoyl-Coenzyme Desaturase, (lxxxix) X77794 H. sapiens mRNA for cyclin G1, (xc) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (xcii) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (xciii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (xciii) X80692 H. sapiens ERK3 mRNA, and (xciv) J00120

Proto-Oncogene C-Myc, Alt. Splice 3, Orf, 114; and (c) the third response further comprises altered expression of at least three nucleic acid molecules, each one being at least 90% identical to a polynucleotide selected from the group consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Huma elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H. sapiens genes for histones H2B.1 and H2A, (x) L05188 H. sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H. sapiens p27 mRNA, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H. sapiens thiol-specific antioxidant protein mRNA, (vii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H. sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H. sapiens mRNA for S100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxi) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxii) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxiii) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H. sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xlii) Z49254 H. sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splice, (xliv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv) AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlvi) X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlix) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (l) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H. sapiens EF-1 delta gene encoding human elongation factor-1-delta, (lvii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lxi) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19. (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 H. sapiens rRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds(carbox, (lxix) L42379 H. sapiens bone-derived growth factor (BPGF-1) niRNA, complete cds, (lxx) X52426 H. sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p16INK4/MTS1 mRNA, complete cds, (lxxv) X92896 H. sapiens mRNA for

ITBA2 protein, (lxxvi) Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genome, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxi) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxii) U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiii) X82693 H. sapiens mRNA for E48 antigen, (lxxxiv) M58026 Human NB-1 mRNA, complete cds, (lxxxv) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvi) X57579 H. sapiens activin beta-A subunit (exon 2), (lxxxvii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxviii) D89667 H. sapiens mRNA for c-myc binding protein, complete cds, (lxxxix) AB000584 H. sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci) J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H. sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H. sapiens PrP gene, exon 2, (xcviii) D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human creatine kinase-B mRNA, complete cds, (ci) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505 H. sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cvi) X67951 H. sapiens mRNA for proliferation-associated gene (pag), (cvii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 H. sapiens MAPKAP kinase (3 pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTF4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kDa subunit, (cxvii) X77794 H. sapiens mRNA for cyclin G1, (cxviii) M29064 Human hnRNP B 1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H. sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 H. sapiens (clone S153) mRNA fragment, (cxxv) D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H. sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 H. sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxx) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxi) L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxi) X53586 Human mRNA for integrin alpha 6, (cxxxi) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxiv) L11066 Human mRNA sequence, (cxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxvi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxvii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxviii) X91247 H. sapiens mRNA for thioredoxin reductase, (cxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlvi) Y08915 H. sapiens mRNA for alpha 4 protein, (cxlvii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H. sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cl) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue (MRL3=mammalian ribosome L, (clv) X78992 H. sapiens

subunit, (cxvii) X77794 H. sapiens mRNA for cyclin G1, (cxviii) M29064 Human hnRNP B 1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H. sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 H. sapiens (clone S153) mRNA fragment, (cxxv) D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H. sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 H. sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxx) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxi) L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxi) X53586 Human mRNA for integrin alpha 6, (cxxxi) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxiv) L11066 Human mRNA sequence, (cxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxvi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxvii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxviii) X91247 H. sapiens mRNA for thioredoxin reductase, (cxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlvi) Y08915 H. sapiens mRNA for alpha 4 protein, (cxlvii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H. sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cl) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue (MRL3=mammalian ribosome L, (clv) X78992 H. sapiens

ERF-2 mRNA, (clvi) L41351 H. sapiens prostasin mRNA, complete cds, (clvii) X75342 H. sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H. sapiens mRNA for desmoglein 2, (clxvi) L19267 H. sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 H. sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H. sapiens mRNA for TGIF protein, (clxxx) D85429 H. sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxiii) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (clxxxiv) X80695 H. sapiens OXA1Hs mRNA, (clxxxv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxv) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvi) D31883 Human mRNA for KIAA0059 gene, complete cds, (clxxxvii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxviii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H. sapiens mRNA for chloride channel (putative) 2139 bp, (cxci) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxcii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciii) X80692 H. sapiens ERK3 mRNA, (cxciv) X90858 H. sapiens mRNA for uridine phosphorylase, (cxcv) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvi) X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcviii) X52611 Human mRNA for transcription factor AP-2, (cxcix) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H. sapiens HBZ17 mRNA, (cciii) X76534 H. sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrrole 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, (ccxiii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein.

42. The method according to claim 27, wherein: (a) the first response further comprises altered expression of at least three nucleic acid molecules, each one at least 90% identical to a polynucleotide selected from the group consisting of: (i) M62831 Human transcription factor ETR101 mRNA, complete cds, (ii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (iii) L04731 H. sapiens translocation T(4:11) of ALL-1 gene to chromosome 4, (iv) X56681 Human junD mRNA, (v) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (vi) L38951 H. sapiens importin beta subunit mRNA, complete cds, (vii) D87071 Human mRNA for KIAA0233 gene, complete cds, (viii) M72885 Human GOS2 gene, 5' flank and cds, (ix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (x)

S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, (xi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (xii) D86988 Human mRNA for KIAA0221 gene, complete cds, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) U62317 Chromosome 22q13 BAC Clone CIT987SK-384D8 complete sequence, (xv) X04412 Human mRNA for plasma gelsolin, (xvi) L27706 Human chaperonin protein (Tcp20) gene complete cds, (xvii) X61123 Human BTG1 mRNA, (xviii) M60974 growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xix) L19437 Human transaldolase mRNA containing transposable element, complete cds, (xx) X57985 H. sapiens genes for histones H2B.1 and H2A, (xxi) D90086 Human pyruvate dehydrogenase (EC 1.2.4.1) beta subunit gene, exons 1-10, (xxii) M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, (xxiii) L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, (xxiv) D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450 HKV), complete cd, (xxv) U37122 Human adducin gamma subunit mRNA, complete cds, (xxvi) D45906 H. sapiens mRNA for LIMK-2, complete cds, (xxvii) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (xxviii) D87438 Human mRNA for KIAA0251 gene, partial cds, (xxix) L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, (xxx) D14043 Human mRNA for MGC-24, complete cds, (xxxi) D13988 Human rab GDI mRNA, complete cds, (xxxii) U28480 Uncoupling Protein Uc, (xxxiii) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (xxxiv) M55265 Human casein kinase II alpha subunit mRNA, complete cds, (xxxv) M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, (xxxvi) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox P, (xxxvii) D87442 Human mRNA for KIAA0253 gene, partial cds, (xxxviii) J03161 Human serum response factor (SRF) mRNA, complete cds, (xxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (xl) U17327 Human neuronal nitric oxide synthase (NOS1) mRNA, complete cds, (xli) D86966 Human mRNA for KIAA0211 gene, complete cds, (xlii) D85527 H. sapiens mRNA for LIM domain, partial cds, (xliii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (xliv) X59434 Human rohu mRNA for rhodanese, (xlv) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, and (xlvi) J05211 Desmoplakin; (b) the second response further comprises altered expression of at least three nucleic acid molecules, each one at least 90% identical to a polynucleotide selected from the group consisting of: (i) M57731 Human gro-beta mRNA, complete cds, (ii) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (iii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (iv) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (v) M72885 Human GOS2 gene, 5' flank and cds, (vi) M62831 Human transcription factor ETR101 mRNA, complete cds, (vii) M28130 Human interleukin 8 (IL8) gene, complete cds, (viii) X57985 H. sapiens genes for histones H2B.1 and H2A, (ix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (x) LI 9779 H. sapiens histone H2A.2 mRNA, complete cds, (xi) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xii) X56681 Human jUND mRNA, (xiii) S75762 Oncogene Tls/Chop, Fusion Activate, (xiv) M84739 Human autoantigen calreticulin mRNA, complete eds, (xv) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (xvi) V00599 Tubulin, Bet, (xvii) X70326 Macmarck, (xviii) D10923 Human mRNA for HM74, (xix) D64142 Human mRNA for histone H1x, complete cds, (xx) D86974 Human mRNA for KIAA0220 gene, partial cds, (xxi) M60974 Human growth arrest and DNA-darnage-inducible protein (gadd45) mRNA, complete cds, (xxii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (xxiii) L13391 Human helix-loop-helix basic phosphoprotein (GOS8) gene, complete cds, (xxiv) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (xxv) U40369 Human spermidine/spermine N1-acetyltransferase (SSAT) gene, complete cds, (xxvi) X52560 Nuclear Factor Nf-II, (xxvii) X61123 Human BTG1 mRNA, (xxviii) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (xxix) U35048 Human TSC-22 protein mRNA, complete cds, (xxx) M69043 H. sapiens MAD-3 mRNA encoding IkB-like activity, complete cds, (xxxii) X51345 Human jun-B mRNA for JUN-B protein, (xxxiii) S68616 Na+/H+exchanger NHE-I isoform [human, heart, mRNA, 4516 nt], (xxxvii) X89750 H. sapiens mRNA for TGIF protein, (xxxiv) X691 11 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein, (xxxv) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (xxxvi) X52541 Human mRNA for early growth response protein 1 (hEGR1), (xxxvii) D50683 H. sapiens mRNA for TGF-betaIIIR alpha, complete cds, (xxxviii) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (xxxix) X91247 H. sapiens mRNA for thioredoxin reductase, (xl) U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, comp, (xli) L19314 Human HRY gene, complete cds, (xlii) M30703 Human amphiregulin

(AR) gene, exon 6, clones lambda-ARH(6,12), (xlivi) U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, (xlv) S78825 Id1, (xlv) D85429 H. sapiens gene for heat shock protein 40, complete cds, (xlvi) U41766 Human metalloprotease/disintegrin/cysteine-rich protein precursor (MDC9) mRNA, (xlvii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, (xlviii) M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, (xlix) D15050 Human mRNA for transcription factor AREB6, complete cds, (l) U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, (li) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (lii) X64330 H. sapiens mRNA for ATP-citrate lyase, (liii) U37122 Human adducin gamma subunit mRNA, complete cds, (liv) X74008 H. sapiens mRNA for protein phosphatase 1 gamma, (lv) U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, (lvi) X76534 H. sapiens NMB mRNA, (lvii) D87071 Human mRNA for KIAA0233 gene, complete cds, (lviii) U90716 Human cell surface protein HCAR mRNA, complete cds, (lix) M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, (lx) U29607 Human methionine aminopeptidase mRNA, complete cds, (lxii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (lxiii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (lxiv) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (lxv) X1 2953 Human rab2 mRNA, YPT 1-related and member of ras family, (lxvi) M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, (lxvii) U72649 Human BTG2 (BTG2) mRNA, complete cds, (lxviii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (lxix) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (lxix) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (lxxi) S74017 Nrf2=NF-E2-like basic leucine zipper transcriptional activator [human, hemin-in, (lxxii) X87241 H. sapiens mRNA for hFat protein, (lxxiii) X52425 Human IL-4-R mRNA for the interleukin 4 receptor, (lxxiv) D79994 Human mRNA for KIAA0172 gene, partial cds, (lxxv) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (lxxvi) M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, (lxxvii) X78992 H. sapiens ERF-2 mRNA, (lxxviii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (lxxix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (lxxx) X52611 Human mRNA for transcription factor AP-2, (lxxxi) U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds, (lxxxii) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (lxxxiii) L26336 Heat Shock Protein, 70 Kda (Gb: Y00371, (lxxxiv) L08246 Human myeloid cell differentiation protein (MCL1) mRNA, (lxxxv) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic, leukemia cells (lxxxvi) J052 11 Desmoplakin, (lxxxvii) L00352 Human low density lipoprotein receptor gene, exon 18, (lxxxviii) Y13647 Stearyl-Coenzyme Desaturase, (lxxxix) X77794 H. sapiens mRNA for cyclin G1, (xc) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (xcii) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (xciii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (xciv) X80692 H. sapiens ERK3 mRNA, and (xcv) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114; and (c) the third response further comprises altered expression of at least three nucleic acid molecules, each one at least 90% identical to a polynucleotide selected from the group consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Huma elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H. sapiens genes for histones H2B.1 and H2A, (x) L05188 H. sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H. sapiens p27 mRNA, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1-radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H. sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H. sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H. sapiens niRNA for S 100

calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxi) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxii) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxiii) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II subunit (hsRPB 10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H. sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xlii) Z49254 H. sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splic, (xliv) U70660 Human copper transport protein HAH 1 (HAH1) mRNA, complete cds, (xlv) AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlvi) X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlxi) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (1) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H. sapiens EF-1 delta gene encoding human elongation factor-1-delta, (lvii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lxi) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19. (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds(carbox, (lxix) L42379 H. sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H. sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p 16INK4/MTS 1 mRNA, complete cds, (lxxv) X92896 H. sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genome, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxi) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxii) U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiii) X82693 H. sapiens mRNA for E48 antigen, (lxxxiv) M58026 Human NB-1 mRNA, complete cds, (lxxxv) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvi) X57579 H. sapiens activin beta-A subunit (exon 2), (lxxxvii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxviii) D89667 H. sapiens mRNA for c-myc binding protein, complete cds, (lxxxix) AB000584 H. sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci) J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H. sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H. sapiens PrP gene, exon 2, (xcviii) D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human creatine kinase-B mRNA, complete cds,

(ci) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505 H. sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cvi) X67951 H. sapiens mRNA for proliferation-associated gene (pag), (cvii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 H. sapiens MAPKAP kinase (3 pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTF4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579

Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kDa subunit, (cxvii) X77794 H. sapiens mRNA for cyclin G1, (cxviii) M29064 Human hnRNP B1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H. sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 H. sapiens (clone s153) mRNA fragment, (cxxv) D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H. sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 H. sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxxxi) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxi) L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39,40 and 41, (cxxxi) X53586 Human mRNA for integrin alpha 6, (cxxxi) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxi) L111066 Human mRNA sequence, (cxxxi) J04444 Human cytochrome c-1 gene, complete cds, (cxxxi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxxi) L07517 Mucin 6, Gastric (Gb:L07517), (cxxxi) X91247 H. sapiens mRNA for thioredoxin reductase, (cxxxi) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii) X12794 Human v-erba related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlv) Y08915 H. sapiens mRNA for alpha 4 protein, (cxlvii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H. sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cli) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue (MRL3=mammalian ribosome L, (clv) X78992 H. sapiens ERF-2 mRNA, (clvi) L41351 H. sapiens prostasin mRNA, complete cds, (clvii) X75342 H. sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U288111 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H. sapiens mRNA for desmoglein 2, (clxvi) L19267 H. sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 H. sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H. sapiens mRNA for TGIF protein, (clxxx) D85429 H. sapiens gene for heat shock protein 40, complete

cds, (clxxxii) J05211 Desmoplakin I, (clxxxiii) M31627 Human X box binding protein-1 (XPB-1) mRNA, complete cds, (clxxxiv) X80695 H. sapiens OXA1Hs mRNA, (clxxxv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxvi) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvii) D31883 Human mRNA for KIAA0059 gene, complete cds, (clxxxviii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxix) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H. sapiens mRNA for chloride channel (putative) 2139 bp, (cxcii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxciii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciii) X80692 H. sapiens ERK3 mRNA, (cxciv) X90858 H. sapiens mRNA for uridine phosphorylase, (cxcv) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvi) X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcviii) X52611 Human mRNA for transcription factor AP-2, (cxcix) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase STHM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H. sapiens HBZ17 mRNA, (cciii) X76534 H. sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, (ccxiii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein.

58. The method according to claim 50, wherein: (a) the first response further comprises altered expression of at least three proteins, each one encoded by a nucleic acid molecule that is at least 90% identical to a polynucleotide selected from the group consisting of: (i) M62831 Human transcription factor ETR101 mRNA, complete cds, (ii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (iii) L04731 H. sapiens translocation T(4:11) of ALL-1 gene to chromosome 4, (iv) X56681 Human junD mRNA, (v) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (vi) L38951 H. sapiens importin beta subunit mRNA, complete cds, (vii) D87071 Human mRNA for KIAA0233 gene, complete cds, (viii) M72885 Human GOS2 gene, 5' flank and cds, (ix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (x) S81914 IEX-1-radiation-inducible immediate-early gene [human, placenta, mRNA Partial, (xi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (xii) D86988 Human mRNA for KIAA0221 gene, complete cds, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) U62317 Chromosome 22q13 BAC Clone CIT987SK-384D8 complete sequence, (xv) X04412 Human mRNA for plasma gelsolin, (xvi) L27706 Human chaperonin protein (Tcp20) gene complete cds, (xvii) X61123 Human BTG1 mRNA, (xviii) M60974growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xix) L19437 Human transaldolase mRNA containing transposable element, complete eds, (xx) X57985 H. sapiens genes for histones H2B.1 and H2A, (xxi) D90086 Human pyruvate dehydrogenase (EC 1.2.4.1) beta subunit gene, exons 1-10, (xxii) M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, (xxiii) L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, (xxiv) D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450HVK), complete cd, (xxv) U37122 Human adducin gamma subunit mRNA, complete cds, (xxvi) D45906 H. sapiens mRNA for LIMK-2, complete cds, (xxvii) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (xxviii) D87438 Human mRNA for KIAA0251 gene, partial cds, (xxix) L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, (xxx) D14043 Human mRNA for MGC-24, complete cds, (xxxi) D13988 Human rab GDI mRNA, complete cds, (xxxii) U28480 Uncoupling Protein Uc, (xxxiii) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds,

(xxxiv) M55265 Human casein kinase II alpha subunit mRNA, complete cds, (xxxv) M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, (xxxvi) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox P, (xxxvii) D87442 Human mRNA for KIAA0253 gene, partial cds, (xxxviii) J03161 Human serum response factor (SRF) mRNA, complete cds, (xxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (xl) U17327 Human neuronal nitric oxide synthase (NOS1) mRNA, complete cds, (xli) D86966 Human mRNA for KIAA0211 gene, complete cds, (xlii) D85527 H. sapiens mRNA for LIM domain, partial cds, (xliii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (xliv) X59434 Human rohu mRNA for rhodanese, (xlv) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, and (xlvi) J05211 Desmoplakin; (b) the second response further comprises altered expression of at least three proteins, each one encoded by a nucleic acid molecule that is at least 90% identical to a polynucleotide selected from the group consisting of: (i) M57731 Human gro-beta mRNA, complete cds, (ii) S81914 IEX-1-radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (iii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (iv) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (v) M72885 Human GOS2 gene, 5' flank and cds, (vi) M62831 Human transcription factor ETR101 mRNA, complete cds, (vii) M28130 Human interleukin 8 (IL8) gene, complete cds, (viii) X57985 H. sapiens genes for histones H2B.1 and H2A, (ix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (x) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xi) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xii) X56681 Human junD mRNA, (xiii) S75762 Oncogene Tls/Chop, Fusion Activate, (xiv) M84739 Human autoantigen calreticulin mRNA, complete cds, (xv) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (xvi) V00599 Tubulin, Bet, (xvii) X70326 Macmarck, (xviii) D10923 Human mRNA for HM74, (xix) D64142 Human mRNA for histone H1x, complete cds, (xx) D86974 Human mRNA for KIAA0220 gene, partial cds, (xxi) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xxii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (xxiii) L13391 Human helix-loop-helix basic phosphoprotein (GOS8) gene, complete cds, (xxiv) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (xxv) U40369 Human spermidine/spermine N1-acetyltransferase (SSAT) gene, complete cds, (xxvi) X52560 Nuclear Factor Nf-Il, (xxvii) X61123 Human BTG1 mRNA, (xxviii) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (xxix) U35048 Human TSC-22 protein mRNA, complete cds, (xxx) M69043 H. sapiens MAD-3 mRNA encoding IKB-like activity, complete cds, (xxxi) X51345 Human jun-B mRNA for JUN-B protein, (xxxii) S68616 Na+/H+exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], (xxxiii) X89750 H. sapiens mRNA for TGIF protein, (xxxiv) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein, (xxxv) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (xxxvi) X52541 Human mRNA for early growth response protein 1 (hEGFR1), (xxxvii) D50683 H. sapiens mRNA for TGF-betaIIIR alpha, complete cds, (xxxviii) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (xxxix) X91247 H. sapiens mRNA for thioredoxin reductase, (xl) U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, comp, (xli) L19314 Human HRY gene, complete cds, (xlii) M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), (xliii) U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, (xliv) S78825 Id1, (xlv) D85429 H. sapiens gene for heat shock protein 40, complete cds, (xlvi) U41766 Human metalloprotease/disintegrin/cysteine-rich protein precursor (MDC9) mRNA, (xlvii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, (xlviii) M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, (xlix) D15050 Human mRNA for transcription factor AREB6, complete cds, (l) U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, (li) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (lii) X64330 H. sapiens mRNA for ATP-citrate lyase, (liii) U37122 Human adducin gamma subunit mRNA, complete cds, (liv) X74008 H. sapiens mRNA for protein phosphatase 1 gamma, (lv) U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, (lvi) X76534 H. sapiens NMB mRNA, (lvii) D87071 Human mRNA for KIAA0233 gene, complete cds, (lviii) U90716 Human cell surface protein HCAB mRNA, complete cds, (lix) U29607 Human DNA-binding protein (HRC1) mRNA, complete cds, (lx) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (lxii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (lxiii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (lxiv) X12953 Human rab2 mRNA, YPT1-related and member of ras

family, (lxv) M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, (lxvi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (lxvii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (lxviii) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (lxix) D50840 H. sapiens nirna for ceramide glucosyltransferase, complete cds, (lxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (lxxi) S74017 Nrf2=NF-E2-like basic leucine zipper transcriptional activator [human, hemin-in, (lxxii) X87241 H. sapiens mRNA for hFat protein, (lxxiii) X52425 Human IL-4-R mRNA for the interleukin 4 receptor, (lxxiv) D79994 Human mRNA for KIAA0172 gene, partial cds, (lxxv) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (lxxvi) M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, (lxxvii) X78992 H. sapiens ERF-2 mRNA, (lxxviii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (lxxix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (lxxx) X52611 Human mRNA for transcription factor AP-2, (lxxxi) U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds, (lxxxii) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (lxxxiii) L26336 Heat Shock Protein, 70 Kda (Gb:Y00371, (lxxxiv) L08246 Human myeloid cell differentiation protein (MCL1) mRNA, (lxxxv) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic, leukemia cells (lxxxvi) J05211 Desmoplakin, (lxxxvii) L00352 Human low density lipoprotein receptor gene, exon 18, (lxxxviii) Y13647 Stearoyl-Coenzyme Desaturase, (lxxxix) X77794 H. sapiens mRNA for cyclin G1, (xc) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (xcii) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (xcii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (xciii) X80692 H. sapiens ERK3 mRNA, and (xciv) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114; and (c) the third response further comprises altered expression of at least three proteins, each one encoded by a nucleic acid molecule that is at least 90% identical to a polynucleotide selected from the group consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (v) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (vi) L10343 Huma elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (spril) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H. sapiens genes for histones H2B.1 and H2A, (x) L05188 H. sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H. sapiens p27 mRNA, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEK-1-radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H. sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H. sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H. sapiens mRNA for S 100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxii) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxiii) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxiv) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H. sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xlii) Z49254 H. sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splice, (xliv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv)

AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlvi) X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlix) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (1) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H. sapiens EF-1 delta gene encoding human elongation factor-1-delta, (lvii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lxi) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19. (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds(carbox, (lxix) LA2379 H. sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H. sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human pl6INK4/MTS1 mRNA, complete cds, (lxxv) X92896 H. sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genom, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxi) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxii) U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiii) X82693 H. sapiens mRNA for E48 antigen, (lxxxiv) M58026 Human NB-1 mRNA, complete cds, (lxxxv) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvi) X57579 H. sapiens activin beta-A subunit (exon 2), (lxxxvii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxviii) D89667 H. sapiens mRNA for c-myc binding protein, complete cds, (lxxxix) AB000584 H. sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci) J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H. sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H. sapiens PrP gene, exon 2, (xcviii) D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human creatine kinase-B mRNA, complete cds, (ci) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class 1, E (Gb:M21533), (ciii) Z29505 H. sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cvii) X67951 H. sapiens mRNA for proliferation-associated gene (pag), (cviii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 H. sapiens MAPKAP kinase (3 pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTF4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds,

(cxv) M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kDa subunit, (cxvii) X77794 H. sapiens mRNA for cyclin Gi, (cxviii) M29064 Human hnRNP B1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H. sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit

(adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 H. sapiens (clone s153) mRNA fragment, (cxxv) D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H. sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 H. sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxxx) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxii) L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxiii) X53586 Human mRNA for integrin alpha 6, (cxxxiv) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxv) L11066 Human mRNA sequence, (cxxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxxvi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxxvii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxxviii) X91247 H. sapiens mRNA for thioredoxin reductase, (cxxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlvii) Y08915 H. sapiens mRNA for alpha 4 protein, (cxlviii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H. sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cli) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue (MRL3=mammalian ribosome L, (clv) X78992 H. sapiens ERF-2 mRNA, (clvi) L41351 H. sapiens prostasin mRNA, complete cds, (clvii) X75342 H. sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H. sapiens mRNA for desmoglein 2, (clxvi) L19267 H. sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 H. sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma I1 mRNA, complete cds, (clxxix) X89750 H. sapiens mRNA for TGIF protein, (clxxx) D85429 H. sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxiii) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (clxxxiv) X80695 H. sapiens OXA1Hs mRNA, (clxxxv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxv) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvi) D31883 Human mRNA for KIAA0059 gene, complete cds, (clxxxvii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxviii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H. sapiens mRNA for chloride channel (putative) 2139 bp, (cxci) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxcii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciii) X80692 H. sapiens ERK3 mRNA, (cxciv) X90858 H. sapiens mRNA for uridine phosphorylase, (cxcv) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvi) X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcviii) X52611 Human mRNA for transcription factor AP-2, (cxcix) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H. sapiens HBZ17 mRNA, (cciii) X76534 H. sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid

transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCPLA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, (ccxiii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein.

61. The composition of claim 60, wherein (a) the first response group consists of a plurality of nucleic acid molecules at least 90% identical to the group of polynucleotides consisting of: (i) M62831 Human transcription factor ETR101 mRNA, complete cds, (ii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (iii) L04731 H. sapiens translocation T(4:11) of ALL-1 gene to chromosome 4, (iv) X56681 Human junD mRNA, (v) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (vi) L38951 H. sapiens importin beta subunit mRNA, complete cds, (vii) D87071 Human mRNA for KIAA0233 gene, complete cds, (viii) M72885 Human GOS2 gene, 5' flank and cds, (ix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (x) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, (xi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (xii) D86988 Human mRNA for KIAA0221 gene, complete cds, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) U62317 Chromosome 22q13 BAC Clone CIT987SK-384D8 complete sequence, (xv) X04412 Human mRNA for plasma gelsolin, (xvi) L27706 Human chaperonin protein (Tcp20) gene complete cds, (xvii) X61123 Human BTG1 mRNA, (xviii) M60974 growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xix) L19437 Human transaldolase mRNA containing transposable element, complete cds, (xx) X57985 H. sapiens genes for histones H2B.1 and H2A, (xxi) D90086 Human pyruvate dehydrogenase (EC 1.2.4.1) beta subunit gene, exons 1-10, (xxii) M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, (xxiii) L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, (xxiv) D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450 HKV), complete cd, (xxv) U37122 Human adducin gamma subunit mRNA, complete cds, (xxvi) D45906 H. sapiens mRNA for LIMK-2, complete cds, (xxvii) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (xxviii) D87438 Human mRNA for KIAA0251 gene, partial cds, (xxix) L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, (cxx) D14043 Human mRNA for MGC-24, complete cds, (xxx) D13988 Human rab GDI mRNA, complete cds, (xxxii) U28480 Uncoupling Protein Uc, (xxxiii) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (xxxiv) M55265 Human casein kinase II alpha subunit mRNA, complete cds, (xxxv) M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, (xxxvi) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox P, (xxxvii) D87442 Human mRNA for KIAA0253 gene, partial cds, (xxxviii) J03161 Human serum response factor (SRF) mRNA, complete cds, (xxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (xl) U17327 Human neuronal nitric oxide synthase (NOS1) mRNA, complete cds, (xli) D86966 Human mRNA for KIAA0211 gene, complete cds, (xlii) D85527 H. sapiens mRNA for LIM domain, partial cds, (xliii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (xliv) X59434 Human rohu mRNA for rhodanese, (xlv) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, and (xlvi) J05211 Desmoplakin; (b) the second response group consists of a plurality of nucleic acid molecules at least 90% identical to the group of polynucleotides consisting of: (i) M57731 Human gro-beta mRNA, complete cds, (ii) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (iii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (iv) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (v) M72885 Human GOS2 gene, 5' flank and cds, (vi) M62831 Human transcription factor ETR101 mRNA, complete cds, (vii) M28130 Human interleukin 8 (IL8) gene, complete cds, (viii) X57985 H. sapiens genes for histones H2B.1 and H2A, (ix) X53800 Human mRNA for macrophage inflammatory

protein-2beta (MIP2beta), (x) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xi) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xii) X56681 Human junD mRNA, (xiii) S75762 Oncogene Tls/Chop, Fusion Activate, (xiv) M84739 Human autoantigen calreticulin mRNA, complete cds, (xv) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (xvi) V00599 Tubulin, Bet, (xvii) X70326 Macmarck, (xviii) D10923 Human mRNA for HM74, (xix) D64142 Human mRNA for histone H1x, complete cds, (xx) D86974 Human mRNA for KIAA0220 gene, partial cds, (xxi) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xxii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (xxiii) L13391 Human helix-loop-helix basic phosphoprotein (GOS8) gene, complete cds, (xxiv) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (xxv) U40369 Human spermidine/spermine N1-acetyltransferase (SSAT) gene, complete cds, (xxvi) X52560 Nuclear Factor Nf-II, (xxvii) X61123 Human BTG1 mRNA, (xxviii) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (xxix) U35048 Human TSC-22 protein mRNA, complete cds, (xxx) M69043 H. sapiens MAD-3 mRNA encoding IκB-like activity, complete cds, (xxxi) X51345 Human jun-B mRNA for JUN-B protein, (xxxii) S68616 Na+/H<sup>+</sup> exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], (xxxiii) X89750 H. sapiens mRNA for TGIF protein, (xxxiv) X69111 H. sapiens HLH 1 R21 mRNA for helix-loop-helix protein, (xxxv) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (xxxvi) X52541 Human mRNA for early growth response protein 1 (hEGR1), (xxxvii) D50683 H. sapiens mRNA for TGF-betaIIIR alpha, complete cds, (xxxviii) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (xxxix) X91247 H. sapiens mRNA for thioredoxin reductase, (xl) U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, comp, (xli) L19314 Human HRY gene, complete cds, (xlii) M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), (xliii) U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, (xliv) S78825 Id1, (xlv) D85429 H. sapiens gene for heat shock protein 40, complete cds, (xlvi) U41766 Human metalloprotease/disintegrin/cysteine-rich protein precursor (MDC9) mRNA, (xlvii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, (xlviii) M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, (xlix) D15050 Human mRNA for transcription factor AREB6, complete cds, (l) U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, (li) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (lii) X64330 H. sapiens mRNA for ATP-citrate lyase, (liii) U37122 Human adducin gamma subunit mRNA, complete cds, (liv) X74008 H. sapiens mRNA for protein phosphatase 1 gamma, (lv) U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, (lvi) X76534 H. sapiens NMB mRNA, (lvii) D87071 Human mRNA for KIAA0233 gene, complete cds, (lviii) U90716 Human cell surface protein HCAR mRNA, complete cds, (lix) M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, (lx) U29607 Human methionine arninopeptidase mRNA, complete cds, (lxii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (lxiii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (lxiv) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (lxv) X12953 Human rab2 mRNA, YPT1-related and member of ras family, (lxv) M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, (lxvi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (lxvii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (lxviii) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (lxix) D50840 H. sapiens mRNA for ceramriide glucosyltransferase, complete cds, (lxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (lxxi) S74017 Nrf2=NF-E2-like basic leucine zipper transcriptional activator [human, hemin-in, (lxxii) X87241 H. sapiens mRNA for hFat protein, (lxxiii) X52425 Human IL-4-R mRNA for the interleukin 4 receptor, (lxxiv) D79994 Human nirRNA for KIAA0172 gene, partial cds, (lxxv) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (lxxvi) M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, (lxxvii) X78992 H. sapiens ERF-2 mRNA, (lxxviii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (lxxix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (lxxx) X52611 Human mRNA for transcription factor AP-2, (lxxxi) U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds, (lxxxii) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (lxxxiii) L26336 Heat Shock Protein, 70 Kda (Gb:Y00371, (lxxxiv) L08246 Human myeloid cell differentiation protein (MCL1) mRNA, (lxxxv) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic, leukemia cells (lxxxvi) J05211 Desmoplakin, (lxxxvii) L00352 Human low density lipoprotein receptor gene, exon 18, (lxxxviii) Y13647

Stearoyl-Coenzyme A Desaturase, (lxxxix) X77794 H. sapiens mRNA for cyclin G1, (xc) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (xcii) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (xcii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (xciii) X80692 H. sapiens ERK3 mRNA, and (xciv) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114; and (c) the third response group consists of a plurality of nucleic acid molecules at least 90% identical to the group of polynucleotides consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Human elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H. sapiens genes for histones H2B.1 and H2A, (x) L05188 H. sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H. sapiens p27 mRNA, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H. sapiens thiol-specific antioxidant protein mRNA, complete cds, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, (xviii) Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H. sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H. sapiens mRNA for S100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli Dnaj homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxviii) M60278 Human sapiens IPL (IPL) mRNA, complete cds, (xxix) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxx) M21186 Human neutrophil cytochrome b light chain mRNA, complete cds, (xxxii) D42040 Human mRNA for KIAA9001 gene, p22 phagocyte b-cytochrome mRNA, compl, (xxxiii) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II complete cds, (xxxv) M21005 Human migration inhibitory subunit (hsRPB10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory subunit (hsRPB10) mRNA, complete cds, (xxxvi) M37583 Human histone factor-related protein 8 (MRP8) gene, complete cds, (xxxvii) Z49989 H. sapiens mRNA for smoothelin, (H2A.Z) mRNA, complete cds, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xlii) Z49254 H. sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Alt. Splice, (xlv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv) AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlv) X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlix) S80437 fatty acid synthase {3' region} Human gene for RNA pol II largest subunit, exon 1, (lx) X04654 Human mRNA for U1 [human, breast and HepG2 cells, mRNA Partial, 22, (l) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H. sapiens EF1delta gene encoding human elongation factor-1-delta, (lvii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lx) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19. (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds (carbox, (lxix) L42379 H. sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H. sapiens mRNA for cytokeratin 13,

(lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiqinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p16INK4/MTS1 mRNA, complete cds, (lxxv) X92896 H. sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genome, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxii) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxiii) U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiv) X82693 H. sapiens mRNA for E48 antigen, (lxxxv) M58026 Human NB-1 mRNA, complete cds, (lxxxvi) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvii) X57579 H. sapiens activin beta-A subunit (exon 2), (lxxxviii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxix) D89667 H. sapiens mRNA for c-myc binding protein, complete cds, (lxxxix) AB000584 H. sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci) J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H. sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H. sapiens PrP gene, exon 2, (xcviii) D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human creatine kinase-B mRNA, complete cds, (ci) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505 H. sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cv) X67951 H. sapiens mRNA for proliferation-associated gene (pag), (cvii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 H. sapiens MAPKAP kinase (3 pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTF4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kDa subunit, (cxvii) X77794 H. sapiens mRNA for cyclin G1, (cxviii) M29064

Human hnRNP B1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H. sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 H. sapiens (clone s153) mRNA fragment, (cxxv) D42123 H. sapiens mRNA for ESP 1/CRP2, complete cds, (cxxvi) X74104 H. sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 H. sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxxxi) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxii) L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxiii) X53586 Human mRNA for integrin alpha 6, (cxxxiv) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxv) LI 1066 Human mRNA sequence, (cxxxvi) J04444 Human cytochrome c-1 gene, complete cds, (cxxxvii) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxxviii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxxix) X91247 H. sapiens mRNA for thioredoxin reductase, (cxxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3' UTR, (cxli) U01337 Human Serffhr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlvii) Y08915 H. sapiens mRNA for alpha 4 protein, (cxlviii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H. sapiens MT-1I mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cl) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA

for KIAA0279 gene, partial cds, (cli) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cli) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue (MRL3=mammalian ribosome (clv) X78992 H. sapiens ERF-2 mRNA, (clvi) L41351 H. sapiens prostasin mRNA, complete cds, (clvii) X75342 H. sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H. sapiens mRNA for desmoglein 2, (clxvi) L19267 H. sapiens 59 protein nmRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 H. sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H. sapiens mRNA for TGIF protein, (clxxx) D85429 H. sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxiii) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (clxxxiv) X80695 H. sapiens OXA1Hs mRNA, (clxxxv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxv) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvi) D31883 Human mRNA for KIAA0059 gene, complete cds, (clxxxvii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxviii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H. sapiens mRNA for chloride channel (putative) 2139 bp, (cxci) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxcii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciii) X80692 H. sapiens ERK3 mRNA, (cxciv) X90858 H. sapiens mRNA for uridine phosphorylase, (cxcv) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvi) X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcviii) X52611 Human mRNA for transcription factor AP-2, (cxcix) U09587 Human glycyt-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H. sapiens HBZ17 mRNA, (cciii) X76534 H. sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACLI) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M1 3929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrrolidine 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, (ccxiii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein.

76. The method according to claim 65, wherein: (a) the first response further comprises an altered pattern of expression of at least one nucleic acid molecule that is at least 90% identical to a polynucleotide selected from the group consisting of: (i) M62831 Human transcription factor ETR101 mRNA, complete cds, (ii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (iii) L04731 H. sapiens translocation T(4: 11) of ALL-1 gene to chromosome 4, (iv) X56681 Human junD

mRNA, (v) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (vi) L38951 H. sapiens importin beta subunit mRNA, complete cds, (vii) D87071 Human mRNA for KIAA0233 gene, complete cds, (viii) M72885 Human GOS2 gene, 5' flank and cds, (ix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (x) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, (xi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (xii) D86988 Human mRNA for KIAA0221 gene, complete cds, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) U62317 Chromosome 22q13 BAC Clone CIT987SK-384D8 complete sequence, (xv) X04412 Human mRNA for plasma gelsolin, (xvi) L27706 Human chaperonin protein (Tcp20) gene complete cds, (xvii) X61123 Human BTG1 mRNA, (xviii) M60974 growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xix) L19437 Human transaldolase mRNA containing transposable element, complete cds, (xx) X57985 H. sapiens genes for histones H2B.1 and H2A, (xxi) D90086 Human pyruvate dehydrogenase (EC 1.2.4.1) beta subunit gene, exons 1-10, (xxii) M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, (xxiii) LI 6862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, (xxiv) D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450 HKV), complete cd, (xxv) U37122 Human adducin gamma subunit mRNA, complete cds, (xxvi) D45906 H. sapiens mRNA for LIMK-2, complete cds, (xxvii) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (xxviii) D87438 Human mRNA for KIAA0251 gene, partial cds, (xxix) L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, (xxx) D14043 Human mRNA for MGC-24, complete cds, (xxxi) D13988 Human rab GDI mRNA, complete cds, (xxxii) U28480 Uncoupling Protein Uc, (xxxiii) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (xxxiv) M55265 Human casein kinase II alpha subunit mRNA, complete cds, (xxxv) M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, (xxxvi) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox P, (xxxvii) D87442 Human mRNA for KIAA0253 gene, partial cds, (xxxviii) J03161 Human serum response factor (SRF) mRNA, complete cds, (xxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (xl) U17327 Human neuronal nitric oxide synthase (NOS1) mRNA, complete cds, (xli) D86966 Human mRNA for KIAA0211 gene, complete cds, (xlii) D85527 H. sapiens mRNA for LIM domain, partial cds, (xliii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (xliv) X59434 Human rohu mRNA for rhodanese, (xlv) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, and (xlvi) J05211 Desmoplakin; (b) the second response further comprises an altered pattern of expression of at least one nucleic acid molecule that is at least 90% identical to a polynucleotide selected from the group consisting of; and (i) M57731 Human gro-beta mRNA, complete cds, (ii) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (iii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (iv) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (v) M72885 Human GOS2 gene, 5' flank and cds, (vi) M62831 Human transcription factor ETRI101 mRNA, complete cds, (vii) M28130 Human interleukin 8 (IL8) gene, complete cds, (viii) X57985 H. sapiens genes for histones H2B.1 and H2A, (ix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (x) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xi) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xii) X56681 Human junD mRNA, (xiii) S75762 Oncogene Tls/Chop, Fusion Activate, (xiv) M84739 Human autoantigen calreticulin mRNA, complete cds, (xv) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (xvi) V00599 Tubulin, Bet, (xvii) X70326 Macmarck, (xviii) D10923 Human mRNA for HM74, (xix) D64142 Human mRNA for histone H1x, complete cds, (xx) D86974 Human mRNA for KIAA0220 gene, partial cds, (xxi) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xxii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (xxiii) L13391 Human helix-loop-helix basic phosphoprotein (GOS8) gene, complete cds, (xxiv) M31627 Human X box binding protein-1 (XPB-1) mRNA, complete cds, (xxv) U40369 Human sperrnidine/spermine N1-acetyltransferase (SSAT) gene, complete cds, (xxvi) X52560 Nuclear Factor Nf-Il, (xxvii) X61123 Human BTG1 mRNA, (xxviii) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (xxix) U35048 Human TSC-22 protein mRNA, complete cds, (xxx) M69043 H. sapiens MAD-3 mRNA encoding I<sub>K</sub>B-like activity, complete cds, (xxxi) X51345 Human jun-B mRNA for JUN-B protein, (xxxii) S68616 Na<sup>+</sup>/H<sup>+</sup> exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], (xxxiii) X89750 H. sapiens mRNA for TGIF protein, (xxxiv) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein, (xxxv) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (xxxvi) X52541 Human mRNA for early growth response protein 1 (hEGR1), (xxxvii) D50683 H. sapiens mRNA for TGF-beta1IR

alpha, complete cds, (xxxviii) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (xxxix) X91247 H. sapiens mRNA for thioredoxin reductase, (xl) U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, comp, (xli) L19314 Human HRY gene, complete cds, (xlii) M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), (xliii) U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, (xliv) S78825 Id1, (xlv) D85429 H. sapiens gene for heat shock protein 40, complete cds, (xlii) U41766 Human metalloprotease/disintegrin/cysteine-rich protein precursor (MDC9) mRNA, (xlvii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, (xlviii) M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, (xlix) D15050 Human mRNA for transcription factor AREB6, complete cds, (l) U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, (li) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (lii) X64330 H. sapiens mRNA for ATP-citrate lyase, (liii) U37122 Human adducin gamma subunit mRNA, complete cds, (liv) X74008 H. sapiens mRNA for protein phosphatase 1 gamma, (lv) U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, (lvi) X76534 H. sapiens NMB mRNA, (lvii) D87071 Human mRNA for KIAA0233 gene, complete cds, (lviii) U90716 Human cell surface protein HCAR mRNA, complete cds, (lix) M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, (lx) U29607 Human methionine aminopeptidase mRNA, complete cds, (lxi) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (lxii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (lxiii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (lxiv) X12953 Human rab2 mRNA, YPT1-related and member of ras family, (lxv) M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, (lxvi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (lxvii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (lxviii) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (lxix) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (lxxi) S74017 Nrf2=NF-E2-like basic leucine zipper transcriptional activator [human, hemin-in, (lxxii) X87241 H. sapiens mRNA for hFat protein, (lxxiii) X52425 Human IL-4-R mRNA for the interleukin 4 receptor, (lxxiv) D79994 Human mRNA for KIAA0172 gene, partial cds, (lxxv) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (lxxvi) M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, (lxxvii) X78992 H. sapiens ERF-2 mRNA, (lxxviii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (lxxix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (lxxx) X52611 Human mRNA for transcription factor AP-2, (lxxxii) U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds, (lxxxiii) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (lxxxiv) L26336 Heat Shock Protein, 70 Kda (Gb:Y00371, (lxxxv) L08246 Human myeloid cell differentiation protein (MCL1) mRNA, (lxxxv) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic, leukemia cells (lxxxvi) J05211 Desmoplakin, (lxxxvii) L00352 Human low density lipoprotein receptor gene, exon 18, (lxxxviii) Y13647 Stearyl-Coenzyme Desaturase, (lxxxix) X77794 H. sapiens mRNA for cyclin G1, (xc) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (xcii) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (xciii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (xciii) X80692 H. sapiens ERK3 mRNA, and (xciv) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114; and (c) the third response further comprises an altered pattern of expression of at least one nucleic acid molecule that is at least 90% identical to a polynucleotide selected from the group consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Huma elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H. sapiens genes for histones H2B.1 and H2A, (x) L05188 H. sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H. sapiens p27 mRNA, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H. sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice,

(xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H. sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H. sapiens mRNA for S100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxi) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxii) D42040 Human mRNA for KIAA0001 gene, complete cds, (xxxiii) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H. sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xlii) Z49254 H. sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splic, (xliv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv) AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlii) X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlix) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (l) X04654 Human mRNA for Ul RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H. sapiens EF-1delta gene encoding human elongation factor-1-delta, (lvii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lxi) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19. (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds(carbox, (lxix) L42379 H. sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H. sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p16INK4/MTS1 mRNA, complete cds, (lxxv) X92896 H. sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genom, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxi) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxii) U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiii) X82693 H. sapiens mRNA for E48 antigen, (lxxxiv) M58026 Human NB-1 mRNA, complete cds, (lxxxv) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvi) X57579 H. sapiens activin beta-A subunit (exon 2), (lxxxvii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxviii) D89667 H. sapiens mRNA for c-myc binding protein, complete cds, (lxxxix) AB000584 H. sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xcii) J04794 Human aldehyde reductase mRNA, complete cds, (xciii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H. sapiens rRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E

mRNA, complete cds, (xcvi) X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H. sapiens PrP gene, exon 2, (xcviii) D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human creatine kinase-B mRNA, complete cds, (ci) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505 H. sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cvi) X67951 H. sapiens mRNA for proliferation-associated gene (pag), (cvii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 H. sapiens MAPKAP kinase (3 pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTf4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human

cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kDa subunit, (cxvii) X77794 H. sapiens mRNA for cyclin G1, (cxviii) M29064 Human hnRNP B1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H. sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 H. sapiens (clone s153) mRNA fragment, (cxxv) D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H. sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 H. sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxxx) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxi) L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxii) X53586 Human mRNA for integrin alpha 6, (cxxxiii) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxiv) L11066 Human mRNA sequence, (cxxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxxvi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxxvii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxxviii) X91247 H. sapiens mRNA for thioredoxin reductase, (cxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlv) Y08915 H. sapiens mRNA for alpha 4 protein, (cxlvii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H. sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cli) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue (MRL3=mammalian ribosome L, (clv) X78992 H. sapiens ERF-2 mRNA, (clvi) L41351 H. sapiens prostasin mRNA, complete cds, (clvii) X75342 H. sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H. sapiens mRNA for desmoglein 2, (clxvi) L19267 H. sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 H. sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase

(HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H. sapiens mRNA for TGIF protein, (clxxx) D85429 H. sapiens gene for heat shock protein 40, complete cds, (clxxxi) J05211 Desmoplakin I, (clxxxii) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (clxxxiii) X80695 H. sapiens OXA1Hs mRNA, (clxxxiv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxv) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvi) U00968 Human SREBP-1 mRNA, complete cds, (clxxxvii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H. sapiens mRNA for chloride channel (putative) 2139 bp, (cxcii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxciii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciv) X80692 H. sapiens ERK3 mRNA, (cxcv) X90858 H. sapiens mRNA for uridine phosphorylase, (cxcvi) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvii) X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcviii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcviii) X52611 Human mRNA for transcription factor AP-2, (cxcix) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase STHM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H. sapiens HBZ17 mRNA, (cciii) X76534 H. sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, (ccxiii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) rRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein.

85. The method according to claim 77, wherein: (a) the first response further comprises an altered pattern of expression of at least one nucleic acid molecule that is at least 90% identical to a polynucleotide selected from the group consisting of: (i) M62831 Human transcription factor ETR101 mRNA, complete cds, (ii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (iii) L04731 H. sapiens translocation T(4;11) of ALL-1 gene to chromosome 4, (iv) X56681 Human junD mRNA, (v) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (vi) L38951 H. sapiens importin beta subunit mRNA, complete cds, (vii) D87071 Human mRNA for KIAA0233 gene, complete cds, (viii) M72885 Human GOS2 gene, 5' flank and cds, (ix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (x) S81914 IEX-31 1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, (xi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (xii) D86988 Human mRNA for KIAA0221 gene, complete cds, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) U62317 Chromosome 22q13 BAC Clone CIT987SK-384D8 complete sequence, (xv) X04412 Human mRNA for plasma gelsolin, (xvi) L27706 Human chaperonin protein (Tcp20) gene complete cds, (xvii) X61123 Human BTG1 mRNA, (xviii) M60974growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xix) L19437 Human transaldolase mRNA containing transposable element, complete cds, (xx) X57985 H. sapiens genes for histones H2B.1 and H2A, (xxi) D90086 Human pyruvate dehydrogenase (EC 1.2.4.1) beta subunit gene, exons 1-10, (xxii) M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, (xxiii) L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, (xxiv) D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450 HKV), complete cd, (xxv) U37122 Human adducin gamma subunit mRNA, complete cds, (xxvi) D45906 H. sapiens mRNA for LIMK-2, complete cds, (xxvii) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (xxviii) D87438 Human mRNA for KIAA0251 gene, partial cds,

(xxix) L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, (xxx) D14043 Human mRNA for MGC-24, complete cds, (xxxi) D13988 Human rab GDI mRNA, complete cds, (xxxii) U28480 Uncoupling Protein Uc, (xxxiii) D50840 H. sapiens mRNA for ceramamide glucosyltransferase, complete cds, (xxxiv) M55265 Human casein kinase II alpha subunit mRNA, complete cds, (xxxv) M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, (xxxvi) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox P, (xxxvii) D87442 Human mRNA for KIAA0253 gene, partial cds, (xxxviii) J03161 Human serum response factor (SRF) mRNA, complete cds, (xxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (x1) U17327 Human neuronal nitric oxide synthase (NOS1) mRNA, complete cds, (xli) D86966 Human mRNA for KIAA0211 gene, complete cds, (xlii) D85527 H. sapiens mRNA for LIM domain, partial cds, (xliii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (xliv) X59434 Human rohu mRNA for rhodanese, (xlv) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, and (xlvi) J05211 Desmoplakin; (b) the second response further comprises an altered pattern of expression of at least three nucleic acid molecule that is at least 90% identical to a polynucleotide selected from the group consisting of; and (i) M57731 Human gro-beta mRNA, complete cds, (ii) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (iii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (iv) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (v) M72885 Human GOS2 gene, 5' flank and cds, (vi) M62831 Human transcription factor ETR101 mRNA, complete cds, (vii) M28130 Human interleukin 8 (IL8) gene, complete cds, (viii) X57985 H. sapiens genes for histones H2B.1 and H2A, (ix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (x) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xi) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xii) X56681 Human jUND mRNA, (xiii) S75762 Oncogene Tls/Chop, Fusion Activate, (xiv) M84739 Human autoantigen calreticulin mRNA, complete cds, (xv) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (xvi) V00599 Tubulin, Bet, (xvii) X70326 Macmarck, (xviii) D10923 Human mRNA for HM74, (xix) D64142 Human mRNA for histone H1x, complete cds, (xx) D86974 Human mRNA for KIAA0220 gene, partial cds, (xxi) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xxii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (xxiii) L13391 Human helix-loop-helix basic phosphoprotein (G0S8) gene, complete cds, (xxiv) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (xxv) U40369 Human spermidine/spermine N1-acetyltransferase (SSAT) gene, complete cds, (xxvi) X52560 Nuclear Factor Nf-Il, (xxvii) X61123 Human BTG1 mRNA, (xxviii) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (xxix) U35048 Human TSC-22 protein mRNA, complete cds, (xxx) M69043 H. sapiens MAD-3 mRNA encoding IKB-like activity, complete cds, (xxxi) X51345 Human jun-B mRNA for JUN-B protein, (xxxii) S68616 Na+/H+ exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], (xxxiii) X89750 H. sapiens mRNA for TGIF protein, (xxxiv) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein, (xxxv) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (xxxvi) X52541 Human mRNA for early growth response protein 1 (hEGR1), (xxxvii) D50683 H. sapiens mRNA for TGF-betaIIR alpha, complete cds, (xxxviii) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (xxxix) X91247 H. sapiens mRNA for thioredoxin reductase, (xl) U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, comp, (xli) L19314 Human HRY gene, complete cds, (xlii) M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), (xliii) U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, (xliv) S78825 Id1, (xlv) D85429 H. sapiens gene for heat shock protein 40, complete cds, (xlvi) U41766 Human metalloprotease/disintegrin/cysteine-rich protein precursor (MDC9) mRNA, (xlvii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, (xlviii) M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, (xlix) D15050 Human mRNA for transcription factor AREB6, complete cds, (l) U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, (li) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (lii) X64330 H. sapiens mRNA for ATP-citrate lyase, (liii) U37122 Human adducin gamma subunit mRNA, complete cds, (liv) X74008 H. sapiens mRNA for protein phosphatase 1 gamma, (lv) U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, (lvi) X76534 H. sapiens NMB mRNA, (lvii) D87071 Human mRNA for KIAA0233 gene, complete cds, (lviii) U90716 Human cell surface protein HRC1 mRNA, complete cds, (lix) M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, (lx) U29607 Human methionine aminopeptidase mRNA, complete cds, (lxi) M76482 Human 130-kD pemphigus vulgaris

antigen mRNA, complete cds, (lxii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (lxiii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (lxiv) X12953 Human rab2 mRNA, YPT1-related and member of ras family, (lxv) M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, (lxvi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (lxvii) D14520 Human mRNA for GC-Box binding protein BTB2, complete cds, (lxviii) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (lxix) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (lxxi) S74017 Nrf2=NFE2-like basic leucine zipper transcriptional activator [human, hemin-in, (lxxii) X87241 H. sapiens mRNA for hFAT protein, (lxxiii) X52425 Human IL-4-R mRNA for the interleukin 4 receptor, (lxxiv) D79994 Human mRNA for KIAA0172 gene, partial cds, (lxxv) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (lxxvi) M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, (lxxvii) X78992 H. sapiens ERF-2 mRNA, (lxxviii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (lxxix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (lxxx) X52611 Human mRNA for transcription factor AP-2, (lxxxi) U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds, (lxxxii) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (lxxxiii) L26336 Heat Shock Protein, 70 Kda (Gb:Y00371, (lxxxiv) L08246 Human myeloid cell differentiation protein (MCL1) mRNA, (lxxxv) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic, leukemia cells (lxxxvi) J05211 Desmoplakin, (lxxxvii) L00352 Human low density lipoprotein receptor gene, exon 18, (lxxxviii) Y13647 Stearoyl-Coenzyme Desaturase, (lxxxix) X77794 H. sapiens mRNA for cyclin G1, (xc) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (xci) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (xcii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (xciii) X80692 H. sapiens ERK3 mRNA, and (xciv) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114; and (c) the third response further comprises an altered pattern of expression of at least one nucleic acid molecule that is at least 90% identical to a polynucleotide selected from the group consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Human elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H. sapiens genes for histones H2B. 1 and H2A, (x) L05188 H. sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarcks, (xii) X67325 H. sapiens p27 mRNA, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H. sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H. sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H. sapiens mRNA for S100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxii) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxiii) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxiv) V00599 Tubulin, Beta, (xxxv) U37690 Human RNA polymerase II subunit (hsRPB10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H. sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell

line, mRNA, 453 nt], (xlvi) Z49254 H. sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splic, (xlv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv) AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlvi) X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlix) S80437 fatty acid synthase { 3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (l) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H. sapiens EF-1 delta gene encoding human elongation factor-1-delta, (lvii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lxi) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxii) U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, (lxiii) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxiv) Y00503 Human mRNA for keratin 19. (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds(carbox, (lxix) L42379 H. sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H. sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin nirNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiqinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p16INK4/MTS1 mRNA, complete cds, (lxxv) X92896 H. sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genom, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3. 1.), (lxxxi) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxii) U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiii) X82693 H. sapiens mRNA for E48 antigen, (lxxxiv) M58026 Human NB-1 mRNA, complete cds, (lxxxv) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvi) X57579 H. sapiens activin beta-A subunit (exon 2), (lxxxvii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxviii) D89667 H. sapiens mRNA for c-myc binding protein, complete cds, (lxxxix) AB000584 H. sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci) J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H. sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H. sapiens PrP gene, exon 2, (xcviii) D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human creatine kinase-B mRNA, complete cds, (ci) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505 H. sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cvii) X67951 H. sapiens mRNA for proliferation-associated gene (pag), (cvii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 H. sapiens MAPKAP kinase (3 pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTF4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human

cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kDa subunit, (cxvii) X77794 H. sapiens mRNA for cyclin G1, (cxviii) M29064 Human hnRNP B1 protein mRNA,

(cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H. sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 H. sapiens (clone s153) mRNA fragment, (cxxv) D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H. sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 H. sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxxx) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxii) L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxii) X53586 Human mRNA for integrin alpha 6, (cxxxiii) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxiv) L11066 Human mRNA sequence, (cxxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxxvi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxxvii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxxviii) X91247 H. sapiens mRNA for thioredoxin reductase, (cxxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain mRNA, complete cds, (cxlvii) Y08915 H. sapiens mRNA for alpha 4 protein, (cxlviii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H. sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cli) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue (MRL3 =mammalian ribosome L, (clv) X78992 H. sapiens ERF-2 mRNA, (clvi) L41351 H. sapiens prostasin mRNA, complete cds, (clvii) X75342 H. sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H. sapiens mRNA for desmoglein 2, (clxvi) L19267 H. sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 H. sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H. sapiens mRNA for TGIF protein, (clxxx) D85429 H. sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxiii) M31627 Human X box binding protein-1 (XBP- 1) mRNA, complete cds, (clxxxiv) X80695 H. sapiens OXA1Hs mRNA, (clxxxv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxvi) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvii) D31883 Human mRNA for KIAA0059 gene, complete cds, (clxxxviii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxix) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (clxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H. sapiens mRNA for chloride channel (putative) 2139 bp, (cxcii) D 14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxcii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciii) X80692 H. sapiens ERK3 mRNA, (cxciv) X90858 H. sapiens mRNA for uridine phosphorylase, (cxcv) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvi) X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcviii) X52611 Human mRNA for transcription factor AP-2, (cxcix) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii)

X77366 H. sapiens HBZ17 mRNA, (cciii) X76534 H. sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M1 3929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene Tls/Chop, Fusion Activated, (ccxiii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) mRNA, complete cds, and (ccxx) X69 111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein.

94. The method according to claim 86, wherein: (a) the first response further comprises an altered pattern of expression of at least one protein that is at least 90% identical to a polypeptide encoded by a polynucleotide selected from the group consisting of: (i) M62831 Human transcription factor ETR101 mRNA, complete cds, (ii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (iii) L04731 H. sapiens translocation T(4;11) of ALL-1 gene to chromosome 4, (iv) X56681 Human junD mRNA, (v) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (vi) L38951 H. sapiens importin beta subunit mRNA, complete cds, (vii) D87071 Human mRNA for KIAA0233 gene, complete cds, (viii) M72885 Human GOS2 gene, 5' flank and cds, (ix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (x) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, (xi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (xii) D86988 Human mRNA for KIAA0221 gene, complete cds, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) U62317 Chromosome 22q13 BAC Clone CIT987SK-384D8 complete sequence, (xv) X04412 Human mRNA for plasma gelsolin, (xvi) L27706 Human chaperonin protein (Tcp20) gene complete cds, (xvii) X61123 Human BTG1 mRNA, (xviii) M60974growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xix) L19437 Human transaldolase mRNA containing transposable element, complete cds, (xx) X57985 H. sapiens genes for histones H2B.1 and H2A, (xxi) D90086 Human pyruvate dehydrogenase (EC 1.2.4.1) beta subunit gene, exons 1-10, (xxii) M34182 Human testis-specific protein kinase gamma-subunit mRNA, complete cds, (xxiii) L16862 H. sapiens G protein-coupled receptor kinase (GRK6) mRNA, complete cds, (xxiv) D13705 Human mRNA for fatty acids omega-hydroxylase (cytochrome P-450 HKV), complete cd, (xxv) U37122 Human adducin gamma subunit mRNA, complete cds, (xxvi) D45906 H. sapiens mRNA for LIMK-2, complete cds, (xxvii) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (xxviii) D87438 Human mRNA for KIAA0251 gene, partial cds, (xxix) L37042 H. sapiens casein kinase I alpha isoform (CSNK1A1) mRNA, complete cds, (xxx) D14043 Human mRNA for MGC-24, complete cds, (xxxi) D13988 Human rab GDI mRNA, complete cds, (xxxii) U28480 Uncoupling Protein Uc, (xxxiii) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (xxxiv) M55265 Human casein kinase II alpha subunit mRNA, complete cds, (xxxv) M96803 Human general beta-spectrin (SPTBN1) mRNA, complete cds, (xxxvi) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox P, (xxxvii) D87442 Human mRNA for KIAA0253 gene, partial cds, (xxxviii) J03161 Human serum response factor (SRF) mRNA, complete cds, (xxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (xl) U17327 Human neuronal nitric oxide synthase (NOSI) mRNA, complete cds, (xli) D86966 Human mRNA for KIAA0211 gene, complete cds, (xlii) D85527 H. sapiens mRNA for LIM domain, partial cds, (xliii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (xliv) X59434 Human rohu mRNA for rhodanese, (xlv) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, and (xlvi) J05211 Desmoplakin; (b) the second response further comprises an altered pattern of expression of at least one protein that is at least 90% identical to a polypeptide encoded by a polynucleotide selected from the group consisting of; and (i) M57731 Human gro-beta mRNA, complete cds, (ii) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (iii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor),

(iv) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (v) M72885 Human GOS2 gene, 5' flank and cds, (vi) M62831 Human transcription factor ETR101 mRNA, complete cds, (vii) M28130 Human interleukin 8 (IL8) gene, complete cds, (viii) X57985 H. sapiens genes for histones H2B.1 and H2A, (ix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (x) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xi) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xii) X56681 Human junD mRNA, (xiii) S75762 Oncogene Tls/Chop, Fusion Activate, (xiv) M84739 Human autoantigen calreticulin mRNA, complete cds, (xv) M21302 Human small proline rich protein (sprlII) mRNA, clone 174N, (xvi) V00599 Tubulin, Bet, (xvii) X70326 Macmarck, (xviii) D10923 Human mRNA for HM74, (xix) D64142 Human mRNA for histone H1x, complete cds, (xx) D86974 Human mRNA for KIAA0220 gene, partial cds, (xxi) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (xxii) X68277 H. sapiens CL 100 mRNA for protein tyrosine phosphatase, (xxiii) L13391 Human helix-loop-helix basic phosphoprotein (G0S8) gene, complete cds, (xxiv) M31627 Human X box binding protein-1 (XBP-1) mRNA, complete cds, (xxv) U40369 Human spermidine/spermine N1-acetyltransferase (SSAT) gene, complete cds, (xxvi) X52560 Nuclear Factor Nf-Il, (xxvii) X61123 Human BTG1 mRNA, (xxviii) U20734 Human transcription factor junB (junB) gene, 5' region and complete cds, (xxix) U35048 Human TSC-22 protein mRNA, complete cds, (xxx) M69043 H. sapiens MAD-3 mRNA encoding IkB-like activity, complete cds, (xxxi) X51345 Human jun-B mRNA for JUN-B protein, (xxxii) S68616 Na+/H+exchanger NHE-1 isoform [human, heart, mRNA, 4516 nt], (xxxiii) X89750 H. sapiens mRNA for TGIF protein, (xxxiv) X691 11 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein, (xxxv) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (xxxvi) X52541 Human mRNA for early growth response protein 1 (hEGR1), (xxxvii) D50683 H. sapiens mRNA for TGF-betaIIR alpha, complete cds, (xxxviii) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (xxxix) X91247 H. sapiens nrRNA for thioredoxin reductase, (xl) U05875 Human clone pSK1 interferon gamma receptor accessory factor-1 (AF-1) mRNA, comp, (xli) L19314 Human HRY gene, complete cds, (xlii) M30703 Human amphiregulin (AR) gene, exon 6, clones lambda-ARH(6,12), (xliii) U34252 Human gamma-aminobutyraldehyde dehydrogenase mRNA, complete cds, (xliv) S78825 Id1, (xlv) D85429 H. sapiens gene for heat shock protein 40, complete cds, (xlvi) U41766 Human metalloprotease/disintegrin/cysteine-rich protein precursor (MDC9) mRNA, (xlvii) U89336 Human HLA class III region containing NOTCH4 gene, partial sequence, homeobox PB, (xlviii) M69181 Human nonmuscle myosin heavy chain-B (MYH10) mRNA, partial cds, (xlix) D15050 Human mRNA for transcription factor AREB6, complete cds, (l) U28386 Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds, (li) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (lii) X64330 H. sapiens mRNA for ATP-citrate lyase, (liii) U37122 Human adducin gamma subunit mRNA, complete cds, (liv) X74008 H. sapiens mRNA for protein phosphatase 1 gamma, (lv) U60205 Human methyl sterol oxidase (ERG25) mRNA, complete cds, (lvi) X76534 H. sapiens NMB mRNA, (lvii) D87071 Human mRNA for KIAA0233 gene, complete cds, (lviii) U90716 Human cell surface protein HCAR mRNA, complete cds, (lix) M91083 Human DNA-binding protein (HRC1) mRNA, complete cds, (lx) U29607 Human methionine aminopeptidase mRNA, complete cds, (lxi) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (lxii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (lxiii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (lxiv) X12953 Human rab2 mRNA, YPT 1-related and member of ras family, (lxv) M60483 Human protein phosphatase 2A catalytic subunit-alpha gene, complete cds, (lxvi) U72649 Human BTG2 (BTG2) mRNA, complete cds, (lxvii) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (lxviii) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (lxix) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (lxxi) S74017 Nrf2=NF-E2-like basic leucine zipper transcriptional activator [human, hemin-in, (lxxii) X87241 H. sapiens mRNA for hFat protein, (lxxiii) X52425 Human IL-4-R mRNA for the interleukin 4 receptor, (lxxiv) D79994 Human mRNA for KIAA0172 gene, partial cds, (lxxv) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (lxxvi) M13829 Human putative raf related protein (pks/a-raf) mRNA, partial cds, (lxxvii) X78992 H. sapiens ERF-2 mRNA, (lxxviii) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (lxxix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (lxxx) X52611 Human mRNA for transcription factor AP-2, (lxxxi) U28749 Human high-mobility group phosphoprotein isoform I-C (HMGIC) mRNA, complete cds, (lxxxii) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (lxxxiii) L26336 Heat Shock

Protein, 70 Kda (Gb:Y00371, (lxxxiv) L08246 Human myeloid cell differentiation protein (MCL1) mRNA, (lxxxv) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic, leukemia cells (lxxxvi) J05211 Desmoplakin, (lxxxvii) L00352 Human low density lipoprotein receptor gene, exon 18, (lxxxviii) Y13647 Stearoyl-Coenzyme A Desaturase, (lxxxix) X77794 H. sapiens mRNA for cyclin G1, (xc) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (xci) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (xcii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (xciii) X80692 H. sapiens ERK3 mRNA, and (xciv) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114; and (c) the third response further comprises an altered pattern of expression of at least one protein that is at least 90% identical to a polypeptide encoded by a polynucleotide selected from the group consisting of: (i) M20030 Human small proline rich protein (sprII) mRNA, clone 930, (ii) X53065, (iii) M13903 Human involucrin gene, exon 2, (iv) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (v) L10343 Human elafin gene, complete cds, (vi) M63573 Human secreted cyclophilin-like protein (SCYLP) mRNA, complete cds, (vii) M21302 Human small proline rich protein (sprII) mRNA, clone 174N, (viii) Y00787 Human mRNA for MDNCF (monocyte-derived neutrophil chemotactic factor), (ix) X57985 H. sapiens genes for histones H2B.1 and H2A, (x) L05188 H. sapiens small proline-rich protein 2 (SPRR2B) gene, complete cds, (xi) X70326 Macmarceks, (xii) X67325 H. sapiens p27 mRNA, (xiii) L19779 H. sapiens histone H2A.2 mRNA, complete cds, (xiv) S81914 IEX-1=radiation-inducible immediate-early gene [human, placenta, mRNA Partial, 1, (xv) D45248 Human mRNA for proteasome activator hPA28 subunit beta, complete cds, (xvi) Z22548 H. sapiens thiol-specific antioxidant protein mRNA, (xvii) M22918 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Non-Muscle, Alt. Splice, (xviii) X06956 Tubulin, Alpha 1, Isoform 44, (xix) V00594 Human mRNA for metallothionein from cadmium-treated cells, (xx) M80254 H. sapiens cyclophilin isoform (hCyp3) mRNA, complete cds, (xxi) U04636 Human cyclooxygenase-2 (hCox-2) gene, complete cds, (xxii) Z14244 H. sapiens coxVIIb mRNA for cytochrome c oxidase subunit VIIb, (xxiii) X99920 H. sapiens mRNA for S100 calcium-binding protein A13, (xxiv) U62800 Human cystatin M (CST6) mRNA, complete cds, (xxv) L08069 Human heat shock protein, E. coli DnaJ homologue mRNA, complete cds, (xxvi) L20688 Human GDP-dissociation inhibitor protein (Ly-GDI) mRNA, complete cds, (xxvii) M13755 Human interferon-induced 17-kDa/15-kDa protein mRNA, complete cds, (xxviii) M60278 Human heparin-binding EGF-like growth factor mRNA, complete cds, (xxix) AF001294 H. sapiens IPL (IPL) mRNA, complete cds, (xxx) X54489 Human gene for melanoma growth stimulatory activity (MGSA), (xxxi) M21186 Human neutrophil cytochrome b light chain p22 phagocyte b-cytochrome mRNA, compl, (xxxii) D42040 Human mRNA for KIAA9001 gene, complete cds, (xxxiii) V00599 Tubulin, Beta, (xxxiv) U37690 Human RNA polymerase II subunit (hsRPB 10) mRNA, complete cds, (xxxv) M21005 Human migration inhibitory factor-related protein 8 (MRP8) gene, complete cds, (xxxvi) M37583 Human histone (H2A.Z) mRNA, complete cds, (xxxvii) Z49989 H. sapiens mRNA for smoothelin, (xxxviii) L24564 Human Rad mRNA, complete cds, (xxxix) D49824 Human HLA-B null allele mRNA, (xl) M59465 Human tumor necrosis factor alpha inducible protein A20 mRNA, complete cds, (xli) S54005 thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453 nt], (xlii) Z49254 H. sapiens L23-related mRNA, (xliii) M22919 Myosin, Light Chain, Alkali, Smooth Muscle (Gb:U02629), Smooth Muscle, Alt. Splice, (xliv) U70660 Human copper transport protein HAH1 (HAH1) mRNA, complete cds, (xlv) AF006084 H. sapiens Arp2/3 protein complex subunit p41-Arc (ARC41) mRNA, complete cds, (xlii) X62083 H. sapiens mRNA for Drosophila female sterile homeotic (FSH) homologue, (xlvii) D86974 Human mRNA for KIAA0220 gene, partial cds, (xlviii) M72885 Human GOS2 gene, 5' flank and cds, (xlix) S80437 fatty acid synthase {3' region} [human, breast and HepG2 cells, mRNA Partial, 22, (l) X04654 Human mRNA for U1 RNA-associated 70K protein, (li) t M26311 Human cystic fibrosis antigen mRNA, complete cds, (lii) X14850 Human H2A.X mRNA encoding histone H2A.X, (liii) M14328 Human alpha enolase mRNA, complete cds, (liv) U07919 Human aldehyde dehydrogenase 6 mRNA, complete cds, (lv) M28130 Human interleukin 8 (IL8) gene, complete cds, (lvi) Z21507 H. sapiens EF-1delta gene encoding human elongation factor-1-delta, (lvii) M92934 Human connective tissue growth factor, complete cds, (lviii) M27436 Human tissue factor gene, complete cds, with a Alu repetitive sequence in the 3', (lix) X74874 H. sapiens gene for RNA pol II largest subunit, exon 1, (lx) X57351 Human 1-8D gene from interferon-inducible gene family, (lxii) X52979 Human gene for small nuclear ribonucleoproteins SmB and SmB', (lxiii) U41515 Human deleted in split hand/split foot 1 (DSS1) mRNA, complete cds, (lxiv) D28235 Human PTGS2 gene for prostaglandin endoperoxide synthase-2, complete cds, (lxv) Y00503 Human mRNA for

keratin 19. (lxv) M57731 Human gro-beta mRNA, complete cds, (lxvi) D50840 H. sapiens mRNA for ceramide glucosyltransferase, complete cds, (lxvii) U52101 Human YMP mRNA, complete cds. (lxviii) D13413 Human mRNA for tumor-associated 120 kDa nuclear protein p120, partial cds(carbox, (lxix) L42379 H. sapiens bone-derived growth factor (BPGF-1) mRNA, complete cds, (lxx) X52426 H. sapiens mRNA for cytokeratin 13, (lxxi) J04456 Human 14 kd lectin mRNA, complete cds, (lxxii) S78771 NAT=CpG island-associated gene [human, mRNA, 1741 nt], (lxxiii) M26730 Human mitochondrial ubiquinone-binding protein (QP) gene, exon 4, (lxxiv) U26727 Human p16INK4/MTS 1 mRNA, complete cds, (lxxv) X92896 H. sapiens mRNA for ITBA2 protein, (lxxvi) Z69043 H. sapiens mRNA translocon-associated protein delta subunit precursor, (lxxvii) L76568 H. sapiens excision and cross link repair protein (ERCC4) gene, complete genome, (lxxviii) M12125 Human fibroblast muscle-type tropomyosin mRNA, complete cds, (lxxix) U09937 Human urokinase-type plasminogen receptor, exon 7, (lxxx) X15822 Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC 1.9.3.1.), (lxxxi) M34516 Human omega light chain protein 14.1 (Ig lambda chain related) gene, exon 3, (lxxxii) U53830 H. sapiens interferon regulatory factor 7A mRNA, complete cds, (lxxxiii) X82693 H. sapiens mRNA for E48 antigen, (lxxxiv) M58026 Human NB-1 mRNA, complete cds, (lxxxv) M90657 Human tumor antigen (L6) mRNA, complete cds, (lxxxvi) X57579 H. sapiens activin beta-A subunit (exon 2), (lxxxvii) D38251 Human mRNA for RPB5 (XAP4), complete cds, (lxxxviii) D89667 H. sapiens mRNA for c-myc binding protein, complete cds, (lxxxix) AB000584 H. sapiens mRNA for TGF-beta superfamily protein, complete cds, (xc) L76200 Human guanylate kinase (GUK1) mRNA, complete cds, (xci) J04794 Human aldehyde reductase mRNA, complete cds, (xcii) X52882 Human t-complex polypeptide 1 gene, (xciii) M79463 Human PML-2 mRNA, complete CDS, (xciv) Y09022 H. sapiens mRNA for Not56-like protein, (xcv) M12529 Human apolipoprotein E mRNA, complete cds, (xcvi) X71129 H. sapiens mRNA for electron transfer flavoprotein beta subunit, (xcvii) X83416 H. sapiens PrP gene, exon 2, (xcviii) D89052 H. sapiens mRNA for proton-ATPase-like protein, complete cds, (xcix) M60974 Human growth arrest and DNA-damage-inducible protein (gadd45) mRNA, complete cds, (c) M16364 Human creatine kinase-B mRNA, complete cds, (ci) D38305 Human mRNA for Tob, complete cds, (cii) X87679 Major Histocompatibility Complex, Class I, E (Gb:M21533), (ciii) Z29505 H. sapiens mRNA for nucleic acid binding protein sub2.3, (civ) K02574, (cv) U09813 Human mitochondrial ATP synthase subunit 9, P3 gene copy, mRNA, nuclear gene enc, (cvii) X67951 H. sapiens mRNA for proliferation-associated gene (pag), (cviii) J04611 Human lupus p70 (Ku) autoantigen protein mRNA, complete cds, (cviii) U09578 H. sapiens MAPKAP kinase (3 pK) mRNA, complete cds, (cix) X53800 Human mRNA for macrophage inflammatory protein-2beta (MIP2beta), (cx) V00599 Tubulin, Beta 2, (cxi) U69126 Human FUSE binding protein 2 (FBP2) mRNA, partial cds, (cxii) X53416 Human mRNA for actin-binding protein (filamin) (ABP-280), (cxiii) U90546 Human butyrophilin (BTf4) mRNA, complete cds, (cxiv) M58459 Human ribosomal protein (RPS4Y) isoform mRNA, complete cds, (cxv) M19961 Human

cytochrome c oxidase subunit Vb (coxVb) mRNA, complete cds, (cxvi) U65579 Human mitochondrial NADH dehydrogenase-ubiquinone Fe-S protein 8, 23 kDa subunit, (cxvii) X77794 H. sapiens mRNA for cyclin G1, (cxviii) M29064 Human hnRNP B1 protein mRNA, (cxix) D21853 Human mRNA for KIAA0111 gene, complete cds, (cxx) X78687 H. sapiens G9 gene encoding sialidase, (cxxi) X15729 Human mRNA for nuclear p68 protein, (cxxii) X04828 Human mRNA for G(i) protein alpha-subunit (adenylate cyclase inhibiting GTP-bind, (cxxiii) L27943 H. sapiens cytidine deaminase (CDA) mRNA, complete cds, (cxxiv) L40391 H. sapiens (clone s153) mRNA fragment, (cxxv) D42123 H. sapiens mRNA for ESP1/CRP2, complete cds, (cxxvi) X74104 H. sapiens mRNA for TRAP beta subunit, (cxxvii) M84332 Human ADP-ribosylation factor 1 gene, exons 2-5, (cxxviii) L37127 H. sapiens RNA polymerase II mRNA, complete cds, (cxxix) M92843 H. sapiens zinc finger transcriptional regulator mRNA, complete cds, (cxxx) U07664 Human HB9 homeobox gene, exons 2 and 3 and complete cds, (cxxxii) L48546 H. sapiens tuberin (TSC2) gene, exons 38, 39, 40 and 41, (cxxxii) X53586 Human mRNA for integrin alpha 6, (cxxxiii) t D21852 Human mRNA for KIAA0029 gene, partial cds, (cxxxiv) LI 1066 Human mRNA sequence, (cxxxv) J04444 Human cytochrome c-1 gene, complete cds, (cxxxvi) M95787 Human 22 kDa smooth muscle protein (SM22) mRNA, complete cds, (cxxxvii) L07517 Mucin 6, Gastric (Gb:L07517), (cxxxviii) X91247 H. sapiens mRNA for thioredoxin reductase, (cxxxix) L11672 Human Kruppel related zinc finger protein (HTF10) mRNA, complete cds, (cxl) U30999 Human (memc) mRNA, 3'UTR, (cxli) U01337 Human Ser/Thr protein kinase (A-RAF-1) gene, complete cds, (cxlii) U28480 Uncoupling Protein Ucp, (cxliii) X12794 Human v-erbA related ear-2 gene, (cxliv) L22005 Human ubiquitin conjugating enzyme mRNA, partial cds, (cxlv) M12886 Human T-cell receptor active beta-chain

mRNA, complete cds, (cxlvi) Y08915 H. sapiens mRNA for alpha 4 protein, (cxlvii) M24547 Amyloid Beta (A4) Precursor Protein, Alt. Splice 2, A4(751), (cxlviii) X76717 H. sapiens MT-11 mRNA, (cxlix) M64347 Human novel growth factor receptor mRNA, 3' cds, (cl) X05409 Human RNA for mitochondrial aldehyde dehydrogenase I ALDH I (EC 1.2.1.3), (cli) D87469 Human mRNA for KIAA0279 gene, partial cds, (clii) M58603 Human nuclear factor kappa-B DNA binding subunit (NF-kappa-B) mRNA, complete cds, (cliii) M76482 Human 130-kD pemphigus vulgaris antigen mRNA, complete cds, (cliv) X06323 Human MRL3 mRNA for ribosomal protein L3 homologue (MRL3=mammalian ribosome L, (clv) X78992 H. sapiens ERF-2 mRNA, (clvi) L41351 H. sapiens prostasin mRNA, complete cds, (clvii) X75342 H. sapiens SHB mRNA, (clviii) U83115 Human non-lens beta gamma-crystallin like protein (AIM1) mRNA, partial cds, (clix) U88629 Human RNA polymerase II elongation factor ELL2, complete cds, (clx) S78825 Id1, (clxi) U28811 Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA, complete cds, (clxii) M58286 H. sapiens tumor necrosis factor receptor mRNA, complete cds, (clxiii) D78129 H. sapiens mRNA for squalene epoxidase, partial cds, (clxiv) D14874 H. sapiens mRNA for adrenomedullin precursor, complete cds, (clxv) Z26317 H. sapiens mRNA for desmoglein 2, (clxvi) L19267 H. sapiens 59 protein mRNA, 3' end, (clxvii) J00120 Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114, (clxviii) U33821 Human tax1-binding protein TXBP151 mRNA, complete cds, (clxix) U52100 Human XMP mRNA, complete cds, (clxx) L31801 H. sapiens monocarboxylate transporter 1 (SLC16A1) mRNA, complete cds, (clxxi) L00058 Human (GH) germline c-myc proto-oncogene, exon 3 and 3' flank, (clxxii) U52426 H. sapiens GOK (STIM1) mRNA, complete cds, (clxxiii) M80244 Human E16 mRNA, complete cds, (clxxiv) U56418 Human lysophosphatidic acid acyltransferase-beta mRNA, complete cds, (clxxv) L38490 H. sapiens ADP-ribosylation factor mRNA, complete cds, (clxxvi) U14603 Human protein-tyrosine phosphatase (HU-PP-1) mRNA, partial sequence, (clxxvii) L77886 Human protein tyrosine phosphatase mRNA, complete cds, (clxxviii) M38258 Human retinoic acid receptor gamma 1 mRNA, complete cds, (clxxix) X89750 H. sapiens mRNA for TGIF protein, (clxxx) D85429 H. sapiens gene for heat shock protein 40, complete cds, (clxxxii) J05211 Desmoplakin I, (clxxxii) M31627 Human X box binding protein-I (XBP-1) mRNA, complete cds, (clxxxiii) X80695 H. sapiens OXA1Hs mRNA, (clxxxiv) M54915 Human h-pim-1 protein (h-pim-1) mRNA, complete cds, (clxxxv) D83777 Human mRNA for KIAA0193 gene, complete cds, (clxxxvi) D31883 Human mRNA for KIAA0059 gene, complete cds, (clxxxvii) U00968 Human SREBP-1 mRNA, complete cds, (clxxxviii) K03195 Human (HepG2) glucose transporter gene mRNA, complete cds, (lxxxix) D86965 Human mRNA for KIAA0210 gene, complete cds, (cxc) Z30643 H. sapiens mRNA for chloride channel (putative) 2139 bp, (cxi) D14520 Human mRNA for GC-Box binding protein BTEB2, complete cds, (cxcii) D87462 Human mRNA for KIAA0272 gene, partial cds, (cxciii) X80692 H. sapiens ERK3 mRNA, (cxciv) X90858 H. sapiens mRNA for uridine phosphorylase, (cxcv) M57763 Human ADP-ribosylation factor (hARF6) mRNA, complete cds, (cxcvi) X92720 H. sapiens mRNA for phosphoenolpyruvate carboxykinase, (cxcvii) M81601 Human transcription elongation factor (SII) mRNA, complete cds, (cxcviii) X52611 Human mRNA for transcription factor AP-2, (cxcix) U09587 Human glycyl-tRNA synthetase mRNA, complete cds, (cc) U14550 Human sialyltransferase SThM (sthm) mRNA, complete cds, (cci) D90209 Human mRNA for DNA binding protein TAXREB67, (ccii) X77366 H. sapiens HBZ17 mRNA, (cciii) X76534 H. sapiens NMB mRNA, (cciv) U37519 Human aldehyde dehydrogenase (ALDH8) mRNA, complete cds, (ccv) M83667 Human NF-IL6-beta protein mRNA, complete cds, (ccvi) U53347 Human neutral amino acid transporter B mRNA, complete cds, (ccvii) L09229 Human long-chain acyl-coenzyme A synthetase (FACL1) mRNA, complete cds, (ccviii) S73591 brain-expressed HHCPA78 homolog [human, HL-60 acute promyelocytic leukemia cells, (ccix) M13929 Human c-myc-P64 mRNA, initiating from promoter P0, (HLmyc2.5) partial cds, (ccx) M55268 Human casein kinase II alpha' subunit mRNA, complete cds, (ccxi) M77836 Human pyrroline 5-carboxylate reductase mRNA, complete cds, (ccxii) HG2724-HT2820\_at S75762 Oncogene Tis/Chop, Fusion Activated, (ccxiii) U72066 H. sapiens CtBP interacting protein CtIP (CtIP) mRNA, complete cds, (ccxiv) U42031 Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA, partial, (ccxv) M27396 Human asparagine synthetase mRNA, complete cds, (ccxvi) X01630 Human mRNA for argininosuccinate synthetase, (ccxvii) D32050 Human mRNA for alanyl-tRNA synthetase, complete cds, (ccxviii) M90656 Human gamma-glutamylcysteine synthetase (GCS) mRNA, complete cds, (ccxix) J04102 Human erythroblastosis virus oncogene homolog 2 (ets-2) nrRNA, complete cds, and (ccxx) X69111 H. sapiens HLH 1R21 mRNA for helix-loop-helix protein.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)[KwIC](#) | [Drawn Desc](#) | [Image](#) 31. Document ID: US 20020086308 A1

L1: Entry 31 of 50

File: PGPB

Jul 4, 2002

PGPUB-DOCUMENT-NUMBER: 20020086308

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DOCUMENT-IDENTIFIER: US 20020086308 A1

TITLE: Ribosome structure and protein synthesis inhibitors

PUBLICATION-DATE: July 4, 2002

## INVENTOR-INFORMATION:

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Hansen, Jeffrey	New Haven		US	

US-CL-CURRENT: 435/6; 378/73, 702/19

## ABSTRACT:

The invention provides methods for producing high resolution crystals of ribosomes and ribosomal subunits as well as crystals produced by such methods. The invention also provides high resolution structures of ribosomal subunits either alone or in combination with protein synthesis inhibitors. The invention provides methods for identifying ribosome-related ligands and methods for designing ligands with specific ribosome-binding properties as well as ligands that may act as protein synthesis inhibitors. Thus, the methods and compositions of the invention may be used to produce ligands that are designed to specifically kill or inhibit the growth of any target organism.

L1: Entry 31 of 50

File: PGPB

Jul 4, 2002

DOCUMENT-IDENTIFIER: US 20020086308 A1

TITLE: Ribosome structure and protein synthesis inhibitors

Detail Description Paragraph (146):

[0239] Refinement has also permitted additional modeling of L10, L39e, and the L11 binding site in 23S rRNA. Furthermore, it has been discovered that certain motifs, for example, RRM topologies, SH3-like barrels and zinc fingers are common in the 50S proteins and each recognizes rRNA in many different ways. Proteins that have significant three-dimensional homology, however, such as L15 and L18e as well as L18 and S11, make essentially identical interactions with rRNA. Additional structural homologies between 50S proteins and non-ribosomal proteins also are apparent. The solvent exposed surfaces of these globular protein domains are rich in aspartate and glutamate residues, while irregular protein extensions penetrate the RNA core of the ribosome. These extensions are often highly conserved, and their abundance of arginine, lysine, and glycine residues is important for their function. Collectively, the results show evolutionary connections between many ribosomal proteins and illustrate that protein-RNA interactions in the ribosome, although largely idiosyncratic, share some common principles.

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L1: Entry 32 of 50

File: PGPB

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PGPUB-DOCUMENT-NUMBER: 20020081614

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DOCUMENT-IDENTIFIER: US 20020081614 A1

TITLE: Functional genomics using zinc finger proteins

PUBLICATION-DATE: June 27, 2002

## INVENTOR-INFORMATION:

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US-CL-CURRENT: 435/6; 435/7.21, 702/19

## ABSTRACT:

0 The present invention provides methods of regulating gene expression using recombinant zinc finger proteins, for functional genomics and target validation applications.

L1: Entry 32 of 50

File: PGPB

Jun 27, 2002

DOCUMENT-IDENTIFIER: US 20020081614 A1

TITLE: Functional genomics using zinc finger proteins

Detail Description Paragraph (114):

[0149] In addition to the promoter, the expression vector typically contains a transcription unit or expression cassette that contains all the additional elements required for the expression of the nucleic acid in host cells, either prokaryotic or eukaryotic. A typical expression cassette thus contains a promoter operably linked, e.g., to the nucleic acid sequence encoding the zinc finger protein, and signals required, e.g., for efficient polyadenylation of the transcript, transcriptional termination, ribosome binding sites, or translation termination. Additional elements of the cassette may include, e.g., enhancers, and heterologous spliced intronic signals.

33. Document ID: US 20020064824 A1

L1: Entry 33 of 50

File: PGPB

May 30, 2002

PGPUB-DOCUMENT-NUMBER: 20020064824

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020064824 A1

TITLE: Screening system for zinc finger polypeptides for a desired binding ability

PUBLICATION-DATE: May 30, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
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US-CL-CURRENT: 435/69.1; 435/320.1, 435/91.21, 536/23.5

## ABSTRACT:

This invention relates to a method for producing a zinc finger nucleic acid binding protein comprising preparing a zinc finger protein according design rules, varying the protein at one or more positions, and selecting variants which bind to a target nucleic acid sequence by polysome display.

L1: Entry 33 of 50

File: PGPB

May 30, 2002

DOCUMENT-IDENTIFIER: US 20020064824 A1

TITLE: Screening system for zinc finger polypeptides for a desired binding ability

Abstract Paragraph (1):

This invention relates to a method for producing a zinc finger nucleic acid binding protein comprising preparing a zinc finger protein according design rules, varying the protein at one or more positions, and selecting variants which bind to a target nucleic acid sequence by polysome display.

Summary of Invention Paragraph (1):

[0001] The present application relates to a method for screening zinc finger polypeptides for a desired binding ability. In particular, the invention relates to a polysome display technique which permits the isolation of binding polypeptides without resorting to phage display techniques.

Summary of Invention Paragraph (10):

[0009] According to a first aspect of, the present invention, there is provided a method for producing a zinc finger nucleic acid binding protein comprising preparing a zinc finger protein according design rules, varying the protein at one or more positions, and selecting variants which bind to a target nucleic acid sequence by polysome display.

Summary of Invention Paragraph (97):

[0094] Selection of varied polypeptides according to the invention is carried out by polysome display (see Table 1). This technique relies on coupled transcription and translation of the coding sequences encoding the zinc finger polypeptides of the invention. This is achieved by preventing dissociation of the mRNA template and the polypeptide chain from the ribosome, such that the whole entity can be isolated as a polysome. Polysomes are then selected by binding the polypeptide to target nucleic acid, and mRNA eluted from those polysomes which display the desired binding characteristics.

Summary of Invention Paragraph (100):

[0097] A polysome library displaying nascent zinc finger polypeptides can be generated by a variety of methods. Generally, an *in vitro* translation system is employed to generate polysomes from a population of added mRNA species. Often, the *in vitro* translation system used is a conventional eukaryotic translation system (e.g., rabbit reticulocyte lysate, wheat germ extract). However, an *E. coli* S30 system (Promega, Madison, Wis.) can be used to generate the polysome library from a population of added mRNA species or by coupled transcription/translation (*infra*). Suitable *E. coli* systems may be produced by conventional methods or may be obtained from commercial sources (Promega, Madison, Wis.). The *E. coli* S30 translation system is generally more efficient at producing polysomes suitable for affinity screening of displayed nascent peptides, and the like. Moreover, a prokaryotic translation system, such as the *E. coli* S30 system, has the further advantage that a variety of

drugs which block prokaryotic translation (e.g., inhibitors of ribosome function), such as rifampicin or chloramphenicol, can be added at a suitable concentration and/or timepoint to stall translation and produce a population of stalled polysomes, suitable for affinity screening against a target nucleic acid sequence.

Summary of Invention Paragraph (101) :

[0098] In general, the method comprises the steps of: (1) introducing a population of mRNA species into a prokaryotic in vitro translation system (e.g., E. coli S30) under conditions suitable for translation to form a pool of polysomes displaying nascent zinc finger polypeptides, so-called polysome forming conditions; (2) contacting the polysomes with a target nucleic acid under suitable binding conditions (i.e., for specific binding to the target nucleic acid and for preserving intact polysome structure); (3) selecting polysomes which are specifically bound to the nucleic acid (e.g., by removing unbound polysomes by washing with a solution); and (4) determining the polynucleotide sequences of the selected polysomes (e.g., by synthesizing cDNA or reverse transcriptase PCR amplification product, and sequencing said cDNA or amplification product). Often, the nucleic acid used for screening is immobilized, such as by being bound to a solid support.

Summary of Invention Paragraph (102) :

[0099] In a variation of the method, the population of mRNA molecules is introduced into the in vitro translation system by de novo synthesis of the mRNA from a DNA template. In this improvement, a population of DNA templates capable of being transcribed in vitro (e.g., having an operably linked T7 or SP6 or other suitable promoter) are introduced into a coupled in vitro transcription/translation system (e.g., an E. coli S30 system) under conditions suitable for in vitro transcription and translation of the transcribed product. Generally, using a coupled in vitro transcription/translation system is highly efficient for producing polysomes displaying nascent zinc finger polypeptides suitable for affinity screening. Of course, and as noted above, uncoupled systems may also be used, i.e., by adding mRNA to an in vitro translation extract.

Summary of Invention Paragraph (103) :

[0100] A further improvement to the general methods of screening nascent zinc finger polypeptide-displaying polysomes comprises the additional step of adding a preblocking agent (e.g., nonfat milk, serum albumin, tRNA, and/or gelatin) prior to or concomitant with the step of contacting the nascent peptide displaying polysomes with an immobilized nucleic acid. The additional step of adding a preblocking agent reduces the amount of polysomes which bind nonspecifically to the target nucleic acid and/or to the immobilization surface (e.g., microtitre well), thereby enhancing the specificity of selection for polysomes displaying peptides that specifically bind to the nucleic acid. Although the preblocking agent can be selected from a broad group of suitable compositions, the group of preblocking agents comprising: nonfat milk/nonfat milk solids, casein, bovine serum albumin, transfer RNA, and gelatin are preferred, with nonfat milk being especially preferable. Other suitable preblocking agents can be used.

Summary of Invention Paragraph (109) :

[0106] Another improvement to the methods of affinity screening is the control of display valency (i.e., the average number of functional zinc finger polypeptides displayed per polysome, and the capacity to vary display valency in different rounds of affinity screening. Typically, a high display valency permits many binding contacts between the polysome and nucleic acid, thus affording stable binding for polysomes which encode zinc finger polypeptide species which have relatively weak binding. Hence, a high display valency system allows screening to identify a broader diversity range of zinc finger polypeptides, since even lower affinity zinc finger polypeptides can be selected. Frequently, such low-to-medium affinity zinc finger polypeptides can be superior candidates for generating very high affinity zinc finger polypeptides, by selecting high affinity zinc finger polypeptides from a pool of mutagenised low-to-medium affinity zinc finger polypeptide clones. Thus, affinity sharpening by mutagenesis and subsequent rounds of affinity selection can be used in conjunction with a broader pool of initially selected zinc finger polypeptide sequences if a high display valency method is used. Alternate rounds of high display valency screening and low display valency screening can be performed, in any order, starting from either a high or low valency system, for as many

affinity screening rounds as desired, with intervening variation and sequence diversity broadening, if desired. Alternate rounds of affinity screening, wherein a first round consists of screening a zinc finger polypeptide library expressed in a high valency display system, selecting zinc finger polypeptide clones which bind the target nucleic acid, optionally conducting a mutagenesis step to expand the sequence variability of the selected zinc finger polypeptides, expressing the selected zinc finger polypeptide clones in a lower valency display system, and selecting clones which bind the target nucleic acid, can be performed, including various permutations and combinations of multiple screening cycles, wherein each cycle can be of a similar or different display valency. This improvement affords an overall screening program that employs systems which are compatible with switchable valency (i.e., one screening cycle can have a different display valency than the other(s), and can alternate in order).

Summary of Invention Paragraph (110):

[0107] Display valency can be controlled by a variety of methods, including but not limited to: controlling the average number of nascent peptides per polysome in a polysome-display system. This can be controlled by any suitable method, including: (1) altering the length of the encoding mRNA sequence to reduce or increase the frequency of translation termination (a longer mRNA will typically display more nascent peptides per polysome than a shorter mRNA encoding sequence), (2) incorporating stalling (i.e., infrequently used) codons in the encoding mRNA, typically distal (downstream of) of the zinc finger polypeptide-encoding portion(s), (3) incorporating RNA secondary structure-forming sequences (e.g., hairpin, cruciform, etc.) distal to the zinc finger polypeptide-encoding portion and proximal to (upstream to) the translation termination site, if any, and/or (4) including an antisense polynucleotide (e.g., DNA, RNA, polyamide nucleic acid) that hybridizes to the mRNA distal to the zinc finger polypeptide-encoding portion and proximal to (and possibly spanning the translation termination site, if any. The length of the mRNA may be increased to increase display valency, such as by adding additional reading frame sequences downstream of the zinc finger polypeptide-encoding sequences; such additional reading frame sequences can, for example, encode the sequence (-AAVP-).sub.n, where n is typically at least 1, frequently at least 5 to 10, often at least 15 to 25, and may be at least 50-100, up to approximately 150 to 500 or more, although infrequently a longer stall sequence can be used. Stalling codons (i.e., codons which are slowly translated relative to other codons in a given translation system) can be determined empirically for any translation system, such as by measuring translation efficiency of mRNA templates which differ only in the presence or relative abundance of particular codons. For example, a set of clones can be evaluated in the chosen translation system; each species or the set has a stalling polypeptide sequence of 25 amino acids, but each stalling polypeptide sequence consists of a repeating series of one codon, such that all translatable codons are represented in the set. When translated under equivalent conditions, the zinc finger polypeptide species which produce polysomes having the highest valency (e.g., as determined by sedimentation rate, buoyancy, electron microscopic examination, and other diagnostic methods) thereby identify stalling codons as the codon(s) in the stalling polypeptide sequence.

Summary of Invention Paragraph (118):

[0115] Each generated DNA template preferably contains a promoter (e.g., T7 or SP6) which is active in an in vitro transcription system. A DNA template generally comprises (1) a promoter which is functional for in vitro transcription and operably linked to (I) a polynucleotide sequence encoding an mRNA period. Said encoded mRNA comprises a polynucleotide sequence which encodes a polypeptide comprising a zinc finger polypeptide, (2) a polynucleotide sequence to which a DNA primer suitable for priming first-strand cDNA synthesis of the mRNA can bind, and (3) a ribosome-binding site and other elements necessary for in vitro translatability of the mRNA, and optionally, for mRNA stability and translatable secondary structure, if any.

Detail Description Paragraph (9):

[0125] The unit contains a bacteriophage T7 RNA polymerase promoter, which drives a coding sequence encoding a zinc finger polypeptide. Appended to the coding sequence is a linker/stalling sequence region which comprises a flexible Gly/Ser linker, an easily translatable region and a stalling region which is composed of codons rare in E. coli. Rare codons hold up the translation process and effectively stall the

ribosome on the template.

Detail Description Paragraph (19) :

[0135] First there is a 31 residue serine-glycine repeat. This serves as a flexible linker, when translated, which ensures that the expressed zinc finger construct has spacial separation, and flexibility with respect to the stalled ribosome.

CLAIMS:

1. A method for producing a zinc finger nucleic acid binding protein comprising preparing a zinc finger protein according design rules, varying the protein at one or more positions, and selecting variants which bind to a target nucleic acid sequence by polysome display.

3. A method for producing a zinc finger nucleic acid binding protein comprising an at least partially varied sequence and selecting variants thereof which bind to a target DNA strand, comprising the steps of: (i) preparing a nucleic acid binding protein of the Cys2-His2 zinc finger class capable of binding to a nucleic acid triplet in a target nucleic acid sequence, wherein binding to each base of the triplet by an .alpha.-helical zinc finger nucleic acid binding motif in the protein is determined as follows: a) if the 5' base in the triplet is G, then position +6 in the .alpha.-helix is Arg; or position +6 is Ser or Thr and position ++2 is Asp; b) if the 5' base in the triplet is A, then position +6 in the .alpha.-helix is Gln and ++2 is not Asp; c) if the 5' base in the triplet is T, then position +6 in the .alpha.-helix is Ser or Thr and position ++2 is Asp; d) if the 5' base in the triplet is C, then position +6 in the .alpha.-helix may be any amino acid, provided that position ++2 in the .alpha.-helix is not Asp; e) if the central base in the triplet is G, then position +3 in the .alpha.-helix is His; f) if the central base in the triplet is A, then position +3 in the .alpha.-helix is Asn; g) if the central base in the triplet is T, then position +3 in the .alpha.-helix is Ala, Ser or Val; provided that if it is Ala, then one of the residues at -1 or +6 is a small residue; h) if the central base in the triplet is C, then position +3 in the .alpha.-helix is Ser, Asp, Glu, Leu, Thr or Val i) if the 3' base in the triplet is G, then position -1 in the .alpha.-helix is Arg; j) if the 3' base in the triplet is A, then position -1 in the .alpha.-helix is Gln; k) if the 3' base in the triplet is T, then position -1 in the (.alpha.-helix is Asn or Gln; l) if the 3' base in the triplet is C, then position -1 in the .alpha.-helix is Asp; (ii) varying the resultant polypeptide at at least one position; and (iii) selecting the variants which bind to a target nucleic acid sequence by polysome display.

13. A method according to any preceding claim, wherein the polysome display technique comprises the steps of: (a) introducing a population of mRNA species into an in vitro translation system under conditions suitable for translation to form a pool of polysomes displaying nascent zinc finger polypeptides; (b) contacting the polysomes with a target nucleic acid under suitable binding conditions; (c) selecting polysomes which are specifically bound to the nucleic acid; and (d) reverse transcribing and amplifying the isolated mRNA.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)

[Print](#) | [Draw Desc](#) | [Image](#)

34. Document ID: US 20010014480 A1

L1: Entry 34 of 50

File: PGPB

Aug 16, 2001

PGPUB-DOCUMENT-NUMBER: 20010014480

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20010014480 A1

TITLE: Test for detecting substances which alter the conformational structure of zinc fingers

PUBLICATION-DATE: August 16, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Hanas, Jay S.	Edmond	OK	US	

US-CL-CURRENT: 436/501; 435/6

## ABSTRACT:

The present invention is a method and kit for analyzing a sample, preferably a liquid environmental sample, which may comprise a toxic xenobiotic element or compound, i.e., an environmental pollutant. The method and kit preferably utilize a portion of a molecule comprising a peptide zinc binding domain, known as a zinc finger.

L1: Entry 34 of 50

File: PGPB

Aug 16, 2001

DOCUMENT-IDENTIFIER: US 20010014480 A1

TITLE: Test for detecting substances which alter the conformational structure of zinc fingers

Summary of Invention Paragraph (10):

[0011] In 1983, it was discovered that cysteine-rich eukaryotic regulatory proteins contain zinc-binding domains and require the zinc ion for function (Hanas et al., J.Biol.Chem., 258:14120). These zinc binding domains were subsequently termed "zinc fingers." A eukaryotic regulatory protein discovered to contain zinc was transcription factor IIIA (TFIIIA), a protein which regulates ribosome synthesis. Each of nine zinc fingers in this protein contains two cysteine (Cys) and two histidine (His) amino acids which bind to a zinc ion.

Detail Description Paragraph (24):

[0053] As shown herein, the Cys.sub.2 His.sub.2 zinc finger structure of TFIIIA is highly sensitive to inhibition by certain xenobiotic metal ions such as cadmium and aluminum. Inhibition of TFIIIA binding to the 5S ribosomal RNA gene was assayed by the DNase I protection method. The results are shown in FIG. 1. In this assay, TFIIIA isolated from frogs, or as a recombinant protein, was incubated for a short period of time with a radioactively labeled double-stranded DNA fragment containing the 5S ribosomal RNA gene sequence (120 base-pairs in length). In TFIIIA's role in regulating ribosome synthesis, the protein binds specifically and tightly to this 5S gene sequence. When this occurs, the bound protein protects a large region of the 5S RNA gene from DNase I digestion. DNase I normally degrades the 5S gene and in the process generates a series of differently sized DNA fragments which can be resolved by electrophoresis. TFIIIA binding protects a DNA region comprising approximately 53 base pairs from DNase I degradation.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)[KWD](#) | [Drawn Desc](#) | [Image](#) 35. Document ID: US 6573060 B1

L1: Entry 35 of 50

File: USPT

Jun 3, 2003

US-PAT-NO: 6573060

DOCUMENT-IDENTIFIER: US 6573060 B1

TITLE: Methods and compositions for targeting DNA metabolic processes using aminoglycoside derivatives

DATE-ISSUED: June 3, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hockensmith; Joel W.	Charlottesville	VA		
Muthuswami; Rohini	Denver	CO		

US-CL-CURRENT: 435/15; 435/18, 536/13.2, 536/13.3, 536/13.6, 536/13.7, 536/4.1

## ABSTRACT:

Protein targets for disease intervention through inhibition of nucleic acid metabolism are disclosed. Novel polypeptides for one such target, DNA-dependent ATPase A, and novel polynucleotides encoding DNA-dependent ATPase A are disclosed. Phosphoaminoglycoside compounds which act on such protein targets to inhibit nucleic acid metabolism. In addition, screening assays for identifying compounds that inhibit nucleic acid-dependent ATPase activity, including, but not limited to, DNA-dependent ATPase A, are disclosed. Such compounds are useful in the treatment of diseases, including but not limited to cancer and infectious disease, through disruption of nucleic acid metabolism and induction of apoptosis. Moreover, methods for prevention and treatment of diseases including, but not limited to cancer and infectious disease are disclosed.

12 Claims, 28 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 23

L1: Entry 35 of 50

File: USPT

Jun 3, 2003

DOCUMENT-IDENTIFIER: US 6573060 B1

TITLE: Methods and compositions for targeting DNA metabolic processes using aminoglycoside derivatives

Brief Summary Text (6):

Finally, there are a number of proteins that are not readily classified according to the specific or nonspecific categories. This third group of proteins is not generally grouped as a class but have the common feature of recognizing and binding to specific nucleic acid structures with neither the sequence specificity nor the electrostatic interactions of either group of proteins described above. This latter group would include proteins such as: i) *E. coli* RuvA and RuvB, which bind Holliday junctions and promote branch migration (Parsons et al., Proc. Natl. Acad. Sci. U.S.A. 89, 5452-5456 (1992); Muller et al., J. Biol. Chem. 268, 17185-17189 (1993)); ii) *E. coli* ribosomal protein L11, which recognizes the three-dimensional conformation of an RNA backbone and thus may regulate conformational changes during the ribosome elongation cycle (Ryan et al., J. Mol. Biol. 221, 1257-1268 (1991); Ryan and Draper. Biochemistry. 28, 9949-9956 (1989)); iii) topoisomerase II, which can yield cleavage of DNA following secondary structure-specific DNA recognition (Froelich-Ammon et al., J. Biol. Chem. 269, 7719-7725 (1994)); iv) DNA-dependent protein kinase, which phosphorylates proteins when activated by the presence of DNA double-stranded to single-stranded transitions (Morozov et al., Journal of Biological Chemistry. 269, 16684-16688 (1994); Chan and Lees-Miller. Journal of Biological Chemistry. 271, 8936-8941 (1996)); and v) transcription factor EBP-80, which also recognizes double- to single-stranded transitions in DNA (Falzon et al., Journal of Biological Chemistry. 268, 10546-10552 (1993)). The sequence specific binding proteins described above utilize a host of motifs for interacting with nucleic acids (zinc fingers, helix-turn-helix, "saddle", etc.). Different potential motifs for this latter group of proteins have not yet been elucidated.

## 36. Document ID: US 6537791 B1

L1: Entry 36 of 50

File: USPT

Mar 25, 2003

US-PAT-NO: 6537791

DOCUMENT-IDENTIFIER: US 6537791 B1

TITLE: Mammalian DNA-dependent ATPase a polypeptides and fusions thereof

DATE-ISSUED: March 25, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hockensmith; Joel W.	Charlottesville	VA		
Muthuswami; Rohini	Denver	CO		

US-CL-CURRENT: 435/196; 435/195, 536/23.2, 536/23.4

## ABSTRACT:

Protein targets for disease intervention through inhibition of nucleic acid metabolism are disclosed. Novel polypeptides for one such target, DNA-dependent ATPase A, and novel polynucleotides encoding DNA-dependent ATPase A are disclosed. Phosphoaminoglycoside compounds which act on such protein targets to inhibit nucleic acid metabolism. In addition, screening assays for identifying compounds that inhibit nucleic acid-dependent ATPase activity, including, but not limited to, DNA-dependent ATPase A, are disclosed. Such compounds are useful in the treatment of diseases, including but not limited to cancer and infectious disease, through disruption of nucleic acid metabolism and induction of apoptosis. Moreover, methods for prevention and treatment of diseases including, but not limited to cancer and infectious disease are disclosed.

3 Claims, 28 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 23

L1: Entry 36 of 50

File: USPT

Mar 25, 2003

DOCUMENT-IDENTIFIER: US 6537791 B1

TITLE: Mammalian DNA-dependent ATPase a polypeptides and fusions thereof

Brief Summary Text (6):

Finally, there are a number of proteins that are not readily classified according to the specific or nonspecific categories. This third group of proteins is not generally grouped as a class but have the common feature of recognizing and binding to specific nucleic acid structures with neither the sequence specificity nor the electrostatic interactions of either group of proteins described above. This latter group would include proteins such as: i) *E. coli* RuvA and RuvB, which bind Holliday junctions and promote branch migration (Parsons et al., Proc. Natl. Acad. Sci. U. S. A. 89, 5452-5456 (1992); Muller et al., J. Biol. Chem. 268, 17185-17189 (1993)); ii) *E. coli* ribosomal protein L11, which recognizes the three-dimensional conformation of an RNA backbone and thus may regulate conformational changes during the ribosome elongation cycle (Ryan et al., J. Mol. Biol. 221, 1257-1268 (1991); Ryan and Draper. Biochemistry. 28, 9949-9956 (1989)); iii) topoisomerase II, which can yield cleavage of DNA following secondary structure-specific DNA recognition (Froelich-Ammon et al., J. Biol. Chem. 269, 7719-7725 (1994)); iv) DNA-dependent protein kinase, which phosphorylates proteins when activated by the presence of DNA double-stranded to single-stranded transitions (Morozov et al., Journal of Biological Chemistry. 269, 16684-16688 (1994); Chan and Lees-Miller. Journal of Biological Chemistry. 271, 8936-8941 (1996)); and v) transcription factor EBP-80, which also recognizes double-to single-stranded transitions in DNA (Falzon et al., Journal of Biological Chemistry. 268, 10546-10552 (1993)). The sequence specific binding proteins

described above utilize a host of motifs for interacting with nucleic acids (zinc fingers, helix-turn-helix, "saddle", etc.). Different potential motifs for this latter group of proteins have not yet been elucidated.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#) | [KUMC](#) | [Draw Desc](#) | [Image](#)

37. Document ID: US 6531306 B1

L1: Entry 37 of 50

File: USPT

Mar 11, 2003

US-PAT-NO: 6531306

DOCUMENT-IDENTIFIER: US 6531306 B1

TITLE: Polynucleotides encoding mammalian DNA-dependent ATPase A polypeptides

DATE-ISSUED: March 11, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hockensmith; Joel W.	Charlottesville	VA		
Muthuswami; Rohini	Denver	CO		

US-CL-CURRENT: 435/196; 435/252.3, 435/254.4, 435/320.1, 435/325, 435/366, 536/23.2

ABSTRACT:

Protein targets for disease intervention through inhibition of nucleic acid metabolism are disclosed. Novel polypeptides for one such target, DNA-dependent ATPase A, and novel polynucleotides encoding DNA-dependent ATPase A are disclosed. Phosphoaminoglycoside compounds which act on such protein targets to inhibit nucleic acid metabolism. In addition, screening assays for identifying compounds that inhibit nucleic acid-dependent ATPase activity, including, but not limited to, DNA-dependent ATPase A, are disclosed. Such compounds are useful in the treatment of diseases, including but not limited to cancer and infectious disease, through disruption of nucleic acid metabolism and induction of apoptosis. Moreover, methods for prevention and treatment of diseases including, but not limited to cancer and infectious disease are disclosed.

13 Claims, 28 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 23

L1: Entry 37 of 50

File: USPT

Mar 11, 2003

DOCUMENT-IDENTIFIER: US 6531306 B1

TITLE: Polynucleotides encoding mammalian DNA-dependent ATPase A polypeptides

Brief Summary Text (6):

Finally, there are a number of proteins that are not readily classified according to the specific or nonspecific categories. This third group of proteins is not generally grouped as a class but have the common feature of recognizing and binding to specific nucleic acid structures with neither the sequence specificity nor the electrostatic interactions of either group of proteins described above. This latter group would include proteins such as: i) E. coli RuvA and RuvB, which bind Holliday junctions and promote branch migration (Parsons et al., Proc. Natl. Acad. Sci. U.S.A. 89, 5452-5456 (1992); Muller et al., J. Biol. Chem. 268, 17185-17189 (1993)); ii) E. coli ribosomal protein L11, which recognizes the three-dimensional conformation of an RNA backbone and thus may regulate conformational changes during

the ribosome elongation cycle (Ryan et al., J. Mol. Biol. 221, 1257-1268 (1991); Ryan and Draper. Biochemistry. 28, 9949-9956 (1989)); iii) topoisomerase II, which can yield cleavage of DNA following secondary structure-specific DNA recognition (Froelich-Ammon et al., J. Biol. Chem. 269, 7719-7725 (1994)); iv) DNA-dependent protein kinase, which phosphorylates proteins when activated by the presence of DNA double-stranded to single-stranded transitions (Morozov et al., Journal of Biological Chemistry. 269, 16684-16688 (1994); Chan and Lees-Miller. Journal of Biological Chemistry. 271, 8936-8941 (1996)); and v) transcription factor EBP-80, which also recognizes double- to single-stranded transitions in DNA (Falzon et al., Journal of Biological Chemistry. 268, 10546-10552 (1993)). The sequence specific binding proteins described above utilize a host of motifs for interacting with nucleic acids (zinc fingers, helix-turn-helix, "saddle", etc.). Different potential motifs for this latter group of proteins have not yet been elucidated.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#) | [KMC](#) | [Drawn Desc](#) | [Image](#)

38. Document ID: US 6503886 B1

L1: Entry 38 of 50

File: USPT

Jan 7, 2003

US-PAT-NO: 6503886

DOCUMENT-IDENTIFIER: US 6503886 B1

TITLE: Compositions containing nucleic acids and ligands for therapeutic treatment

DATE-ISSUED: January 7, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Baird; J. Andrew	San Diego	CA		
Chandler; Lois Ann	Encinitas	CA		
Sosnowski; Barbara A.	Coronado	CA		

US-CL-CURRENT: 514/44; 424/93.2, 435/320.1, 435/325, 435/455

ABSTRACT:

Preparations of conjugates of a receptor-binding internalized ligand and a cytocide-encoding agent and compositions containing such preparations are provided. The conjugates contain a polypeptide that is reactive with an FGF receptor, such as bFGF, or another heparin-binding growth factor, cytokine, or growth factor coupled to a nucleic acid binding domain. One or more linkers may be used in the conjugation. The linker is selected to increase the specificity, toxicity, solubility, serum stability, or intracellular availability, and promote nucleic acid condensation of the targeted moiety. The conjugates are complexed with a cytocide-encoding agent, such as DNA encoding saporin. Conjugates of a receptor-binding internalized ligand to a nucleic acid molecule are also provided.

29 Claims, 41 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 25

L1: Entry 38 of 50

File: USPT

Jan 7, 2003

DOCUMENT-IDENTIFIER: US 6503886 B1

TITLE: Compositions containing nucleic acids and ligands for therapeutic treatment

Brief Summary Text (12):

The nucleic acid binding domain is poly-L-lysine in one embodiment. In other embodiments, the nucleic acid binding domain is a transcription factor selected from the group consisting of helix-turn-helix motif proteins, homeodomain proteins, zinc finger motif proteins, steroid receptor proteins, leucine zipper motif proteins, helix-loop-helix motif proteins, and .beta.-sheet motif proteins. In other embodiments, the nucleic acid binding domain binds nonspecifically to nucleic acids and is selected from the group consisting of poly-L-lysine, protamine, histone and spermine. In a preferred embodiment, the nucleic acid binding domain binds the coding region of a ribosome inactivating protein such as saporin. In another preferred embodiment, FGF is conjugated to poly-L-lysine.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)

[KUMC](#) | [Drawn Desc](#) | [Image](#)

39. Document ID: US 6503717 B2

L1: Entry 39 of 50

File: USPT

Jan 7, 2003

US-PAT-NO: 6503717

DOCUMENT-IDENTIFIER: US 6503717 B2

TITLE: Methods of using randomized libraries of zinc finger proteins for the identification of gene function

DATE-ISSUED: January 7, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Casey; Casey C.	San Mateo	CA		
Liu; Qiang	Foster City	CA		
Rebar; Edward J.	El Cerrito	CA		
Wolffe; Alan P.	Orinda	CA		

US-CL-CURRENT: 435/6; 435/320.1, 435/455, 536/23.5

ABSTRACT:

The present invention relates to methods of using libraries of randomized zinc finger proteins to identify genes associated with selected phenotypes.

30 Claims, 5 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 5

L1: Entry 39 of 50

File: USPT

Jan 7, 2003

DOCUMENT-IDENTIFIER: US 6503717 B2

TITLE: Methods of using randomized libraries of zinc finger proteins for the identification of gene function

Detailed Description Text (72):

A typical expression cassette thus contains a promoter operably linked, e.g., to the nucleic acid sequence encoding the zinc finger protein, and signals required, e.g., for efficient polyadenylation of the transcript, transcriptional termination, ribosome binding sites, or translation termination. Additional elements of the cassette may include, e.g., enhancers, and heterologous spliced intronic signals.

[Full](#) [Title](#) [Citation](#) [Front](#) [Review](#) [Classification](#) [Date](#) [Reference](#) [Sequences](#) [Attachments](#)[KMLC](#) [Drawn Desc](#) [Image](#) 40. Document ID: US 6500938 B1

L1: Entry 40 of 50

File: USPT

Dec 31, 2002

US-PAT-NO: 6500938

DOCUMENT-IDENTIFIER: US 6500938 B1

TITLE: Composition for the detection of signaling pathway gene expression

DATE-ISSUED: December 31, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Au-Young; Janice	Berkeley	CA		
Seilhamer; Jeffrey J.	Los Altos Hills	CA		

US-CL-CURRENT: 536/23.1, 422/50, 422/68.1, 435/6, 436/501, 536/24.1, 536/24.3,  
536/24.31, 536/24.32, 536/24.33

## ABSTRACT:

The present invention relates to a composition comprising a plurality of polynucleotide probes. The composition can be used as array elements in a microarray. The present invention also relates to a method for selecting polynucleotide probes of the composition.

5 Claims, 0 Drawing figures

Exemplary Claim Number: 1

L1: Entry 40 of 50

File: USPT

Dec 31, 2002

DOCUMENT-IDENTIFIER: US 6500938 B1

TITLE: Composition for the detection of signaling pathway gene expression

Detailed Description Paragraph Table (2):

SEQ ID NO: 111 1270442 190222 protein phosphatase 2A 72 kDa regulatory subunit.  
[human.] SEQ ID NO: 112 1272054 297157 rab17. [house mouse.] SEQ ID NO: 113 1274145  
263309 Vgr-2 = transforming growth factor-beta homolog [mice, embryo, mRNA, [Mus sp.  
embryo.] SEQ ID NO: 114 1281655 206809 Rat pot. G protein coupled receptor (RTA)  
mRNA, complete cds. [Rat (strain Sprague Dawley) adult thoracic aorta, cDNA to  
mRNA,] SEQ ID NO: 115 1282128 1166574 Rattus norvegicus synaptojanin mRNA, complete  
cds. [Norway rat strain = Sprague-Dawley.] SEQ ID NO: 116 1283291 1914774 H. sapiens  
mRNA for inositol 1,4,5-trisphosphate 3-kinase. [human.] SEQ ID NO: 117 1287810  
531156 Mus musculus AKR voltage-gated potassium-channel (KCNA4) gene, [house mouse.]  
SEQ ID NO: 118 1290913 189510 p70 ribosomal S6 kinase alpha-II. [human.] SEQ ID NO:  
119 1291082 998898 scleraxis = basic helix-loop-helix transcription factor [mouse]  
SEQ ID NO: 120 1292876 265430 14-3-3 protein gamma subtype, 14-3-3 gamma = putative  
protein kinase [rats brain.] SEQ ID NO: 121 1296847 1321818 RING zinc finger  
protein. [chicken.] SEQ ID NO: 122 1298633 1899225 Human iroquois-class homeodomain  
protein IRX-5 mRNA, partial cds. [human.] SEQ ID NO: 123 1301193 1679668  
mitogen-activated kinase kinase kinase 5. [human.] SEQ ID NO: 124 1303605 INCYTE  
protein-tyrosine phosphatase [Homo sapiens] SEQ ID NO: 125 1305513 INCYTE opsin = RH2  
group [Astyanax fasciatus] SEQ ID NO: 126 1309709 1929061 map kinase interacting  
kinase. [house mouse.] SEQ ID NO: 127 1311434 440389 epsilon-COP. [cow.] SEQ ID NO:  
128 1312824 180551 Human cis-acting sequence. [Homo sapiens Adult cDNA to mRNA.] SEQ  
ID NO: 129 1313615 33991 1D-myo-inositol-trisphosphate 3-kinase. [human.] SEQ ID NO:  
130 1316844 1066165 coat protein gamma-cop. [aurochs.] SEQ ID NO: 131 1317663

1033992 H. sapiens CpG island genomic Mse1 fragment, 55 clone, [human.] SEQ ID NO: 132 1318463 1770564 preprotein translocase. [human.] SEQ ID NO: 133 1318926 2072784 Na+/nucleoside cotransporter. [human.] SEQ ID NO: 134 1319543 1439562 Cdc28p. [fission yeast.] SEQ ID NO: 135 1320009 304671 DEAD-box protein. [fruit fly.] SEQ ID NO: 136 1321876 1262844 Mus musculus ATP-dependent RNA helicase mRNA, partial cds. [house mouse.] SEQ ID NO: 137 1322075 2088668 similar to Achlya ambisexualis antheridiol steroid receptor [Caenorhabditis elegans strain = Bristol N2.] SEQ ID NO: 138 1322305 1575660 Human calcium-activated potassium channel hSK1 (SK) mRNA, complete [human.] SEQ ID NO: 139 132240 1853976 protein kinase. [fission yeast.] SEQ ID NO: 140 132739 64704 G10 protein, zinc finger protein [Xenopus laevis] SEQ ID NO: 141 1329634 984114 ribosome receptor [Canis familiaris] SEQ ID NO: 142 1330522 308766 Human zinc finger protein 20 (ZNF20) pentanucleotide repeat [Homo sapiens DNA.] SEQ ID NO: 143 133140 1871200 multidrug resistance-associated protein. [human.] SEQ ID NO: 144 1336317 506412 cadherin-8. [human.] SEQ ID NO: 145 1337114 166306 steroid receptor. [Achlya ambisexualis.] SEQ ID NO: 146 1338358 456189 H. sapiens F11 mRNA. [human.] SEQ ID NO: 147 1340202 1236649 Rattus norvegicus kidney protein phosphatase 1 myosin binding [Norway rat strain = Wistar.] SEQ ID NO: 148 1340712 203152 Rattus norvegicus branched-chain alpha-ketoacid dehydrogenasekinase [Rattus norvegicus (strain Sprague-Dawley) (library: lambda-gt11)] SEQ ID NO: 149 1342719 186665 potassium channel protein. [human.] SEQ ID NO: 150 1346025 INCYTE olfactory protein [Rattus norvegicus] SEQ ID NO: 151 1346050 1020144 Human DNA binding protein (HPF2) mRNA, complete cds. [human.] SEQ ID NO: 152 1354139 190222 protein phosphatase 2A 72 kDa regulatory subunit. [human.] SEQ ID NO: 153 1362803 289404 chloride channel protein. [cow.] SEQ ID NO: 154 1363431 452444 glucose-6-phosphatase. [human.] SEQ ID NO: 155 1363825 1199603 Human zinc finger protein C2H2-25 mRNA, complete cds. [human.] SEQ ID NO: 156 1365530 1669511 Human death receptor 3 (DR3) mRNA, complete cds. [human.] SEQ ID NO: 157 1366285 1222544 Mus musculus putative cerebral cortex transcriptional regulator [house mouse strain = BALB/c.] SEQ ID NO: 158 1367234 2108051 Human cGMP-stimulated 3',5'-cyclic nucleotide phosphodiesterase [human.] SEQ ID NO: 159 1379718 36034 rhoc coding region (AA 1-193). [human.] SEQ ID NO: 160 138100 499072 Weel Hu. [human.] SEQ ID NO: 161 1392516 1326113 calcium influx channel. [human.] SEQ ID NO: 162 1398545 790790 protein kinase I [Rattus norvegicus] SEQ ID NO: 163 1399470 439260 T26G10.1. [Caenorhabditis elegans.] SEQ ID NO: 164 1403760 1049294 Human KRAB zinc finger protein (ZNF177) mRNA, splicing variant, [human.] SEQ ID NO: 165 1403772 1161343 interleukin 17 receptor. [house mouse.] SEQ ID NO: 166 1405404 1483143 apolipoprotein E receptor 2 precursor. [human.] SEQ ID NO: 167 140819 296460 H. sapiens mRNA for ZNF11B. [human.] SEQ ID NO: 168 1413041 1679667 Human mitogen-activated kinase kinase 5 (MAPKKK5) mRNA, [human.] SEQ ID NO: 169 1413667 186798 voltage-gated potassium channel. [human.] SEQ ID NO: 170 1414780 1398905 Rat brain mRNA for long type PB-cadherin, complete cds. [Rattus norvegicus (strain: Wistar) brain cDNA to mRNA, clone: B5.] SEQ ID NO: 171 1415728 2145061 Homo sapiens TTF-I interacting peptide 21 mRNA, partial cds. [human.] SEQ ID NO: 172 1415866 340485 Homo sapiens DNA-binding protein (ZNF) gene, partial cds. [Homo sapiens Placenta DNA.] SEQ ID NO: 173 1416274 190222 protein phosphatase 2A 72 kDa regulatory subunit. [human.] SEQ ID NO: 174 1417215 2121307 Human DNA sequence from 4PTEL, Huntington's Disease Region, [human.] SEQ ID NO: 175 1418783 1021158 H. sapiens CpG island genomic Mse1 fragment, 197 clone, [human.] SEQ ID NO: 176 1419071 1500558 2-hydroxyhepta-2,4-diene-1,7-dioate isomerase. [Methanococcus jannaschii.] SEQ ID NO: 177 1419270 2077934 Protein Kinase. [Norway rat.] SEQ ID NO: 178 1419541 34339 LDL-receptor related precursor (AA - 19 45 to). [human.] SEQ ID NO: 179 1419783 902886 Ksp-cadherin [Oryctolagus cuniculus] SEQ ID NO: 180 1421907 340478 DNA-binding protein. [human.] SEQ ID NO: 181 1422786 841318 mutant sterol regulatory element binding protein-2 [Cricetulus griseus] SEQ ID NO: 182 1427806 1518609 FGF receptor activating protein FRAG1. [Norway rat.] SEQ ID NO: 183 1429651 473969 one of the members of sodium-glucose cotransporter family. [Oryctolagus cuniculus.] SEQ ID NO: 184 1431066 1835659 multidrug resistance-associated protein. [human.] SEQ ID NO: 185 1440783 984114 ribosome receptor [Canis familiaris] SEQ ID NO: 186 1441850 204208 GABA-A receptor delta subunit. [Norway rat.] SEQ ID NO: 187 1443611 192371 cyclic nucleotide phosphodiesterase. [house mouse.] SEQ ID NO: 188 1445845 1103585 laminin beta 2 chain. [human.] SEQ ID NO: 189 1446171 1061253 putative protein. [baker's yeast.] SEQ ID NO: 190 1449092 558634 R. norvegicus mRNA for protein phosphatase V. [Norway rat.] SEQ ID NO: 191 1449207 488551 zinc finger protein ZNF132. [human.] SEQ ID NO: 192 1450036 32565 H. sapiens hZNF3 (22) zn finger gene. [human.] SEQ ID NO: 193 1450691 984305 hPAK65 [Homo sapiens] SEQ ID NO:

194 1452972 1335855 Human 5'-AMP-activated protein kinase, gamma-1 subunit mRNA, [human.] SEQ ID NO: 195 1454748 1854512 ATP receptor. [human.] SEQ ID NO: 196 1455911 595396 Rattus norvegicus Edg-1 orphan receptor (edg-1) mRNA, complete cds. [rat.] SEQ ID NO: 197 1458887 984114 ribosome receptor [Canis familiaris] SEQ ID NO: 198 1459432 1737178 Human somatostatin receptor-like protein (SLC1) gene, complete cds. [human.] SEQ ID NO: 199 1473889 1514568 canalicular multidrug resistance protein. [human.] SEQ ID NO: 200 1478125 468707 H. sapiens OZF mRNA. [human.] SEQ ID NO: 201 1478654 2076881 Human putative endothelin receptor type B-like protein mRNA, [human.] SEQ ID NO: 202 1484393 506800 similar to protein kinases. [Caenorhabditis elegans strain = Bristol N2.] SEQ ID NO: 203 1485091 1353416 cyclin-dependent kinase 4. [human.] SEQ ID NO: 204 148732 498730 H. sapiens HZF6 mRNA for zinc finger protein. [human.] SEQ ID NO: 205 1488082 1679772 Bopl. [house mouse.] SEQ ID NO: 206 1491965 1871168 sodium channel 2. [human.] SEQ ID NO: 207 149706 984114 ribosome receptor [Canis familiaris] SEQ ID NO: 208 1499408 202805 Rattus norvegicus angiotensin/vasopressin receptor (AVP) mRNA, [Rattus norvegicus cDNA to mRNA.] SEQ ID NO: 209 150224 1657296 H. sapiens CACNL1A4 gene, exon 37. [human.] SEQ ID NO: 210 1506560 206809 Rat pot. G protein coupled receptor (RTA) mRNA, complete cds. [Rat (strain Sprague Dawley) adult thoracic aorta, cDNA to mRNA] SEQ ID NO: 211 1513769 160858 zinc finger protein. [Bradyzia coprophila.] SEQ ID NO: 212 1513871 53612 M. musculus of PCTAIRE-3 mRNA encoding protein kinase. [house mouse.] SEQ ID NO: 213 1515432 179227 ATP1A1. (human.) SEQ ID NO: 214 1518859 1699163 ETX1 {alternatively spliced} [human, retina, 4 Peptide, aa]. [human retina.] SEQ ID NO: 215 1519420 1418625 W04D2.1. [Caenorhabditis elegans.] SEQ ID NO: 216 1520835 2062676 inhibitor of apoptosis protein 2. [house mouse.] SEQ ID NO: 217 1522516 182696 Human cellular fibronectin mRNA.

Detailed Description Paragraph Table (6):

SEQ ID NO: 524 2299185 INCYTE vacuolar H-ATPase subunit D [Bos taurus] SEQ ID NO: 525 2303708 2143259 H. sapiens mRNA for phosphoinositide 3-kinase. [human.] SEQ ID NO: 526 2306416 57503 R. norvegicus mRNA for putative zinc finger protein. [Norway rat.] SEQ ID NO: 527 2307314 1834506 H. sapiens mRNA for leucine zipper protein. [human.] SEQ ID NO: 528 2309463 1620755 zinc-finger protein Zn72D. [fruit fly.] SEQ ID NO: 529 2309843 264008 vik = variant in the kinase [mice, 29 mRNA, nt]. [Mus sp.] SEQ ID NO: 530 2310743 2145080 TGF-beta related neurotrophic factor receptor 2. [human.] SEQ ID NO: 531 2311280 54915 transferrin receptor. [house mouse.] SEQ ID NO: 532 2311543 1834511 serine/threonine protein kinase. [human.] SEQ ID NO: 533 2313466 INCYTE SoxP1 [Oncorhynchus mykiss] SEQ ID NO: 534 2314239 802104 PP1M M21 subunit = protein phosphatase 1M [rat] SEQ ID NO: 535 2314295 1857461 immunoglobulin-like transcript-3. [human.] SEQ ID NO: 536 2314392 1488263 putative serine/threonine protein kinase PRK. [human.] SEQ ID NO: 537 2314806 2145082 TGF-beta related neurotrophic factor receptor 2. [house mouse.] SEQ ID NO: 538 2316650 1568629 Mus musculus nuclear LIM interactor (NLI) mRNA, complete cds. [house mouse.] SEQ ID NO: 539 2320312 297026 zinc finger protein. [human.] SEQ ID NO: 540 2323363 339485 transferrin precursor (AA at 8) [human.] SEQ ID NO: 541 2328550 193572 Mus musculus guanine nucleotide dissociation stimulator for a [Mus musculus (library: of D. Schatz and M. Oettinger) cDNA to mRNA.] SEQ ID NO: 542 233623 184108 Human Kruppel related gene, exon X, clone pHKR1RS. [Human DNA, clone pHKR1RS.] SEQ ID NO: 543 2342912 349074 Rattus norvegicus vesicula-associate calmodulin-binding protein [Rattus norvegicus (rat).] SEQ ID NO: 544 2344002 295631 RNA-binding protein. [baker's yeast.] SEQ ID NO: 545 2345776 434018 Yes-associated protein (65 kDa). [chicken.] SEQ ID NO: 546 2346805 854536 RPD3 gene [Saccharomyces cerevisiae] SEQ ID NO: 547 2348269 1438876 Mus musculus zinc finger protein (ZPR1) mRNA, complete cds. [house mouse.] SEQ ID NO: 548 2348529 431416 TYNWKGLLFVT [house mouse.] SEQ ID NO: 549 2348983 538153 p115. [Norway rat.] SEQ ID NO: 550 2349726 685170 adherin [Drosophila melanogaster] SEQ ID NO: 551 235386 206534 Sprague-Dawley (clone LRB13) RAB14 mRNA, complete cds. [Rattus norvegicus (strain Sprague-Dawley) (library: LAMBDA ZAPII)] SEQ ID NO: 552 2359101 1066165 coat protein gamma-cop. [aurochs.] SEQ ID NO: 553 2359895 984114 ribosome receptor [Canis familiaris] SEQ ID NO: 554 2361065 2154754 Homo sapiens mRNA for fructose-1,6- bisphosphatase. [human.] SEQ ID NO: 555 2361591 602438 phosphoprotein. [cow.] SEQ ID NO: 556 2361640 1574998 canalicular multispecific organic anion transporter. [human.] SEQ ID NO: 557 2362476 2116688 deltaEF1. [chicken.] SEQ ID NO: 558 2363031 3028 mitochondrial outer membrane 72K protein. [Neurospora crassa.] SEQ ID NO: 559 2364091 24763 alpha-2 macroglobulin receptor. [human.] SEQ ID NO: 560 2365149 1161342 Mus musculus interleukin 17 receptor mRNA, complete cds. [house mouse.] SEQ ID NO: 561 2365675

1835659 multidrug resistance-associated protein. [human.] SEQ ID NO: 562 2369983  
407991 Mouse RNA helicase and RNA-dependent ATPase from the DEAD box [Mus musculus cDNA to mRNA.] SEQ ID NO: 563 2370163 439260 T26G10.1. [Caenorhabditis elegans.] SEQ ID NO: 564 2371406 1184157 Max-interacting transcriptional repressor. [house mouse.] SEQ ID NO: 565 2372591 1546778 Mus musculus p53-associated cellular protein PACT mRNA, partial [house mouse.] SEQ ID NO: 566 2373667 1199603 Human zinc finger protein C2H2-25 mRNA, complete cds. [human.] SEQ ID NO: 567 2374748 455015 DNA-binding protein. [house mouse.] SEQ ID NO: 568 2375244 1151179 Mus musculus frizzled-3 protein mRNA, complete cds. [house mouse.] SEQ ID NO: 569 2375549 1236943 RIP protein kinase. [human.] SEQ ID NO: 570 2378367 862386 purine specific Na+ nucleoside cotransporter [Rattus norvegicus] SEQ ID NO: 571 2378372 57501 unidentified ORF (60 AA). [Norway rat.] SEQ ID NO: 572 2380464 1448983 chromodomain-helicase-DNA-binding protein. [fruit fly.] SEQ ID NO: 573 2394910 1293574 transcriptional repressor protein. [fruit fly.] SEQ ID NO: 574 2395359 1033033 ribosomal S6 kinase. [human.] SEQ ID NO: 575 2395967 340188 H+ -ATPase C subunit. [human.] SEQ ID NO: 576 2396336 165003 heme-regulated eIF-2a kinase. [European rabbit.] SEQ ID NO: 577 2414332 533711 rabphilin-3A. [Norway rat.] SEQ ID NO: 578 2415521 406586 M. musculus NKx-5.1 mRNA. [house mouse.] SEQ ID NO: 579 2415970 2145059 Homo sapiens TTF-I interacting peptide 20 mRNA, partial cds. [human.] SEQ ID NO: 580 2417796 407488 unknown. [baker's yeast.] SEQ ID NO: 581 241996 200999 Mus musculus (clone 2) serum inducible kinase (SNK) mRNA, mRNA [Mus musculus cDNA to mRNA.] SEQ ID NO: 582 2444978 312701 R. norvegicus mRNA for TRAP-complex gamma subunit. [Norway rat.] SEQ ID NO: 583 2444995 972933 DEC205 [Mus musculus] SEQ ID NO: 584 2445310 1016012 neural cell adhesion protein BIG-2 precursor. [Norway rat.] SEQ ID NO: 585 2445356 1256606 EI24. [house mouse.] SEQ ID NO: 586 2446605 6715 Zn-binding protein [Pleurodeles waltli] SEQ ID NO: 587 2446779 516726 MafG, a bZip nuclear protein structurally related to maf oncogene [chicken.] SEQ ID NO: 588 2447124 1293574 transcriptional repressor protein. [fruit fly.] SEQ ID NO: 589 2447742 913346 VAV2 = VAV oncogene homolog [Homo sapiens] SEQ ID NO: 590 2450425 1518608 Rattus norvegicus FGF receptor activating protein FRAG1 (FRAG1) [Norway rat.] SEQ ID NO: 591 2451140 642620 mSin3B gene product [Mus musculus] SEQ ID NO: 592 2453340 1321818 RING zinc finger protein. [chicken.] SEQ ID NO: 593 2454062 22380 CAAT-box DNA binding protein subunit B (NF-YB). [maize.] SEQ ID NO: 594 2455270 516012 PINCH protein. [human.] SEQ ID NO: 595 2458266 1911185 HNF-3/fork-head homolog-3. [human.] SEQ ID NO: 596 2458342 170991 ADA2. [baker's yeast.] SEQ ID NO: 597 2470285 1066833 follitropin receptor. [pig.] SEQ ID NO: 598 2471894 726283 zinc-finger protein [Mus musculus] SEQ ID NO: 599 2472278 404781 Rat proto-oncogene (Ets-1) mRNA, complete cds. [Rattus norvegicus cDNA to mRNA.] SEQ ID NO: 600 2472462 206885 Rattus rattus sec61 homologue mRNA, complete cds. [Rattus rattus liver cDNA to mRNA.] SEQ ID NO: 601 2472878 1491718 hTAFII100. [human.] SEQ ID NO: 602 2473612 450532 Sodium-Phosphate Transport System 1. [human.] SEQ ID NO: 603 2475604 1814273 Human apobec-1 binding protein 1 mRNA, complete cds. [human.] SEQ ID NO: 604 2475740 399711 G-protein coupled receptor type B, GCR type B {clone PPR1} [cattle, [cattle tongue taste papillae.] SEQ ID NO: 605 2480469 561722 monocarboxylate transporter 1. [human.] SEQ ID NO: 606 2482853 704347 paxillin [Homo sapiens] SEQ ID NO: 607 2483647 1136637 leucine-zipper protein. [chicken.] SEQ ID NO: 608 2502254 49942 AM2 receptor. [house mouse.] SEQ ID NO: 609 2504131 600885 Mus musculus signal recognition particle receptor beta subunit [mouse.] SEQ ID NO: 610 2506506 1537069 Rattus norvegicus nucleoporin p54 mRNA, complete cds. [Norway rat.] SEQ ID NO: 611 2506976 300416 myasthenic syndrome antigen B [human, fetal brain, 34 mRNA, nt]. [human fetal brain.] SEQ ID NO: 612 2507750 1277083 Human histone deacetylase HD1 mRNA, complete cds. [human.] SEQ ID NO: 613 2507903 307329 protocadherin 43. [human.] SEQ ID NO: 614 2508812 971464 K-Cl cotransporter [Homo sapiens] SEQ ID NO: 615 2509024 807817 human putative RNA helicase HRH1 [Homo sapiens] SEQ ID NO: 616 2509610 602434 GABA/noradrenaline transporter. [human.] SEQ ID NO: 617 2510184 2150135 Mus musculus mitotic checkpoint protein kinase (Bub1) mRNA, [house mouse.] SEQ ID NO: 618 2511250 1174018 RU49. [house mouse.] SEQ ID NO: 619 251188 538151 p115. [cow.] SEQ ID NO: 620 2512273 1000125 PRK2. [human.] SEQ ID NO: 621 2515448 505088 hSNF2b. [human.] SEQ ID NO: 622 2517151 INCYTE translocase [Bos taurus] SEQ ID NO: 623 2517343 164271 alpha 1B-glycoprotein. [North American opossum.] SEQ ID NO: 624 2527954 311339 unknown. [thale cress.] SEQ ID NO: 625 2528163 531750 probable mitochondrial protein. [baker's yeast.] SEQ ID NO: 626 2529044 35219 Human mRNA for p68 protein. [human.] SEQ ID NO: 627 2529619 2121229 Homo sapiens BAC129, complete sequence. [human.] SEQ ID NO: 628 2530840 1914258 F45G2.c. [Caenorhabditis elegans.] SEQ ID NO: 629 2531047 1151253 Mus musculus

putative transmembrane receptor (frizzled 4) mRNA, [house mouse.] SEQ ID NO: 630  
2538191 250811 putative ATP-dependent RNA helicase = Dbp73D [Drosophila,

Detailed Description Paragraph Table (9):

SEQ ID NO: 820 543989 488550 Human zinc finger protein ZNF132 mRNA, complete cds. [human.] SEQ ID NO: 821 547319 183410 Human brain guanine nucleotide-binding protein alpha-i subunit [Human, cDNA to mRNA, clones BG-4 and BG21-2.] SEQ ID NO: 822 548019 190734 Human protein-tyrosine kinase (JAK1) mRNA, complete cds. [Homo sapiens cDNA to mRNA.] SEQ ID NO: 823 548607 250743 inositol monophosphatase, myo-inositol monophosphatase {EC [human hippocampus.] SEQ ID NO: 824 548950 1065409 bomapin. [human.] SEQ ID NO: 825 552800 57504 zinc finger protein. [Norway rat.] SEQ ID NO: 826 553106 1171564 metabotropic glutamate receptor type 3 (mGluR3). [human.] SEQ ID NO: 827 553217 498729 zinc finger protein. [human.] SEQ ID NO: 828 554215 INCYTE fat protein [Drosophila melanogaster] SEQ ID NO: 829 555188 1854512 ATP receptor. [human.] SEQ ID NO: 830 555552 961490 Rat mRNA for neuronal high affinity glutamate transporter [Rattus norvegicus] SEQ ID NO: 831 555697 1781009 P2X4 purinoceptor. [human.] SEQ ID NO: 832 557918 190220 protein phosphatase 1 2A kDa regulatory subunit. [human.] SEQ ID NO: 833 559803 453376 zinc finger protein PZF. [house mouse.] SEQ ID NO: 834 565623 1905897 Homo sapiens DNA from chromosome 19-cosmid f19399 (.about.17 kb EcoRI [Homo sapiens (clone\_lib: LL19NC02 F2 chromosome 19-specific cosmid] SEQ ID NO: 835 566670 453373 zinc finger protein. [house mouse.] SEQ ID NO: 836 568080 1769490 Human kruppel-related zinc finger protein (ZNF184) mRNA, partial [human.] SEQ ID NO: 837 568987 285995 KIAA0001. [human.] SEQ ID NO: 838 569038 286105 zinc finger protein. [house mouse.] SEQ ID NO: 839 569648 682722 MARCO [Mus musculus] SEQ ID NO: 840 581952 157196 D-ets-4 DNA binding domain protein. [fruit fly.] SEQ ID NO: 841 585906 431415 Mouse (BALB/c) alpha-7 integrin mRNA, complete cds. [Mus musculus (mouse).] SEQ ID NO: 842 589144 1848233 DNA-binding protein CBA1. [human.] SEQ ID NO: 843 589345 1773293 tissue inhibitor of metalloproteinase 4. [human.] SEQ ID NO: 844 589487 1177700 MAPKAPK-4. [Hemicentrotus pulcherrimus.] SEQ ID NO: 845 599596 984114 ribosome receptor [Canis familiaris] SEQ ID NO: 846 600663 2149792 Roaz. [Norway rat.] SEQ ID NO: 847 602926 1163141 potassium channel alpha subunit Kv2.2. [African clawed frog.] SEQ ID NO: 848 605666 205814 olfactory protein. [Norway rat.] SEQ ID NO: 849 607820 1296426 type ii small proline rich protein [Ovis aries] SEQ ID NO: 850 608819 1184066 calcium-activated chloride channel. [cow.] SEQ ID NO: 851 609792 2077934 Protein Kinase. [Norway rat.] SEQ ID NO: 852 609982 431415 Mouse (BALB/c) alpha-7 integrin mRNA, complete cds. [Mus musculus (mouse).] SEQ ID NO: 853 611390 2145062 TTF-I interacting peptide 21; TIP21; Transcription Termination [human.] SEQ ID NO: 854 618092 459748 Sec61-complex gamma-subunit. [dog.] SEQ ID NO: 855 619240 467319 hexose carrier protein. [castor bean.] SEQ ID NO: 856 619292 2104785 90RF binding protein 1. [house mouse.] SEQ ID NO: 857 621179 550067 Homo sapiens GTP-binding protein (RAB4) mRNA, complete cds. [Homo sapiens (tissue library: of J. Mallet) pheochromocytoma cDNA to] SEQ ID NO: 858 627813 1881554 Human cosmid g1980a018, complete sequence. [human.] SEQ ID NO: 859 629242 902886 Ksp-cadherin [Oryctolagus cuniculus] SEQ ID NO: 860 632097 206430 proton pump polypeptide. [Norway rat.] SEQ ID NO: 861 632449 1103873 TDAG8. [house mouse.] SEQ ID NO: 862 633696 1813646 MEK kinase 3. [human.] SEQ ID NO: 863 635376 1698720 zinc finger protein. [human.] SEQ ID NO: 864 637331 1871539 mitogen-activated protein kinase phosphatase 4. [human.] SEQ ID NO: 865 639017 1399863 GDNF receptor alpha. [Norway rat.] SEQ ID NO: 866 639489 1151256 transmembrane receptor. [house mouse.] SEQ ID NO: 867 639750 1613852 zinc finger protein zfp2. [human.] SEQ ID NO: 868 640759 1872474 Mus musculus transcription factor Sox-M (sox-M) mRNA, partial cds. [house mouse.] SEQ ID NO: 869 641384 807817 Cdc28p [Schizosaccharomyces pombe] SEQ ID NO: 870 662342 1369844 sulfonylurea receptor. [human.] SEQ ID NO: 871 669862 498721 zinc finger protein. [human.] SEQ ID NO: 872 670279 1914307 F49C5.g. [Caenorhabditis elegans.] SEQ ID NO: 873 670448 1613852 zinc finger protein zfp2. [human.] SEQ ID NO: 874 671514 193400 Murine GABA-A receptor delta-subunit gene, exon 9. [Murine DNA.] SEQ ID NO: 875 674892 1009708 clathrin-associated AP-2 complex AP50 subunit. [house mouse.] SEQ ID NO: 876 674947 56281 R. norvegicus cDNA for glutamate receptor subunit (GluR6), kainate [Norway rat.] SEQ ID NO: 877 675190 498152 ha0946 protein is Kruppel-related. [human.] SEQ ID NO: 878 676592 1203968 Homo sapiens chromosome X region from filamin (FLN) gene to [human.] SEQ ID NO: 879 677049 340443 Human zinc finger protein 41 (ZNF41) gene, 3' end. [Homo sapiens (tissue library: Laoxnl0i: 577 ATCC) adult DNA.] SEQ ID NO: 880 678003 456189 H. sapiens F11 mRNA. [human.] SEQ ID NO: 881 679760 339714 Human tyrosine kinase (FER) mRNA, complete cds. [Human]

fibroblast, cDNA to mRNA.] SEQ ID NO: 882 680833 1502342 H. sapiens mRNA for receptor phosphate PCP-2. [human.] SEQ ID NO: 883 683211 157409 fat protein. [fruit fly.] SEQ ID NO: 884 684126 184108 Human Kruppel related gene, exon X, clone PHKR1RS. [Human DNA, clone pPHKR1RS.] SEQ ID NO: 885 685434 1146129 integrin-linked kinase. [human.] SEQ ID NO: 886 687223 438372 H. sapiens mRNA for protein kinase C mu. [human.] SEQ ID NO: 887 688183 33985 trypsin inhibitor. [human.] SEQ ID NO: 888 689078 1155052 anterior-restricted homeobox protein. [house mouse.] SEQ ID NO: 889 689776 682722 MARCO [Mus musculus]] SEQ ID NO: 890 690231 182847 G0S19-1 peptide precursor. [human.] SEQ ID NO: 891 692341 34141 Human Kox1 gene for zinc finger protein. [human.] SEQ ID NO: 892 693783 2052369 Human Chromosome 11 pac pDJ1173a5, complete sequence. [human.] SEQ ID NO: 893 696484 34339 LDL-receptor related precursor (AA - 19 45 to). [human.] SEQ ID NO: 894 699542 187268 Human lyn mRNA encoding a tyrosine kinase. [Human cDNA to mRNA.] SEQ ID NO: 895 700261 599827 serine/threonine protein kinase. [human.] SEQ ID NO: 896 700322 200999 Mus musculus (clone 2) serum inducible kinase (SNK) mRNA, mRNA [Mus musculus cDNA to mRNA.] SEQ ID NO: 897 704164 1448983 chromodomain-helicase-DNA-binding protein. [fruit fly.] SEQ ID NO: 898 705322 1050529 H. sapiens ZNF74-1 mRNA. [human.] SEQ ID NO: 899 705365 854170 Ndr protein kinase [Homo sapiens] SEQ ID NO: 900 705546 1667370 protein kinase. [house mouse.] SEQ ID NO: 901 706386 1181670 Human GTP-binding protein alpha q subunit (GNAQ) mRNA, complete [human.] SEQ ID NO: 902 706487 1107688 H. sapiens mRNA for interferon regulatory factor 3. [human.] SEQ ID NO: 903 707357 2077825 MNK1. [human.] SEQ ID NO: 904 709070 189512 protein p78. [human.] SEQ ID NO: 905 718593 190422 protein phosphatase-2A subunit-alpha. [human.] SEQ ID NO: 906 724339 437910 R. norvegicus mRNA for alpha 7A integrin. [Norway rat.] SEQ ID NO: 907 727639 1161230 protocadherin-3. [Norway rat.] SEQ ID NO: 908 727885 1244514 Mus musculus CACCC-box binding protein BKLF mRNA, complete cds. [house mouse.] SEQ ID NO: 909 727914 498727 zinc finger protein. [human.] SEQ ID NO: 910 728966 1752664 cathepsin L. [zebrafish.] SEQ ID NO: 911 731048 1665821 Similar to D. melanogaster cadherin-related tumor suppressor. [human.] SEQ ID NO: 912 734390 498727 zinc finger protein. [human.] SEQ ID NO: 913 735249 436564 GTP-binding protein. [house mouse.] SEQ ID NO: 914 736663 1407597 TSC-22 protein. [human.] SEQ ID NO: 915 737809 407992 RNA helicase. [house mouse.] SEQ ID NO: 916 751271 1769490 Human kruppel-related zinc finger protein (ZNF184) mRNA, partial [human.] SEQ ID NO: 917 751640 2076882 putative endothelin receptor type B-like protein. [human.] SEQ ID NO: 918 752848 456090 effector cell protease receptor 1. [human.] SEQ ID NO: 919 753522 1665793 Similar to S. cerevisiae YD9335.03c protein (S54640). [human.] SEQ ID NO: 920 754412 2062692 sodium phosphate transporter. [human.] SEQ ID NO: 921 755778 1877195 Human DNA sequence from 215 PAC on chromosome X contains ESTs, [human.] SEQ ID NO: 922 757359 577019 procKr2. [chicken.] SEQ ID NO: 923 757560 1658504 Rga. [fruit fly.] SEQ ID NO: 924 758754 2149603 Mus musculus flotillin mRNA, complete cds. [house mouse.] SEQ ID NO: 925 761192 498720 H. sapiens HZF10 mRNA for zinc finger protein. [human.] SEQ ID NO: 926 769786 538261 TR4 orphan receptor. [human.] SEQ ID NO: 927 773734 1841525 ESE-1a. [human.] SEQ ID NO: 928 774419 1184066 calcium-activated chloride channel. [cow.] SEQ ID NO: 929 775019 183929 Human HEB helix-loop-helix protein (HEB) mRNA, complete cds. [Homo sapiens cDNA to mRNA.] SEQ ID NO: 930 775384 1517820 p56 KKIAMRE protein kinase. [human.] SEQ ID NO: 931 775437 1184066 calcium-activated chloride channel. [cow.] SEQ ID NO: 932 775634 1698720 zinc finger protein. [human.] SEQ ID NO: 933 776025 516012 PINCH protein. [human.] SEQ ID NO: 934 777809 220864 Rat PP-1a gene for catalytic subunit of protein phosphatase 1. [Rat (Fischer F344), cDNA to mRNA.] SEQ ID NO: 935 778003 406738 Shb. [human.] SEQ ID NO: 936 778511 340478 DNA-binding protein. [human.] SEQ ID NO: 937 778806 2138189 Human herpesvirus entry mediator mRNA, complete cds.

<a href="#">Full</a>	<a href="#">Title</a>	<a href="#">Citation</a>	<a href="#">Front</a>	<a href="#">Review</a>	<a href="#">Classification</a>	<a href="#">Date</a>	<a href="#">Reference</a>	<a href="#">Sequences</a>	<a href="#">Attachments</a>
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<a href="#">HTML</a>	<a href="#">Draw</a>	<a href="#">Desc</a>	<a href="#">Image</a>
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## □ 41. Document ID: US 6479626 B1

L1: Entry 41 of 50

File: USPT

Nov 12, 2002

US-PAT-NO: 6479626

DOCUMENT-IDENTIFIER: US 6479626 B1

TITLE: Poly zinc finger proteins with improved linkers

DATE-ISSUED: November 12, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kim; Jin-Soo	Inchon			KR
Pabo; Carl O.	Newton	MA		

US-CL-CURRENT: 530/300; 435/69.7, 530/324, 530/350

ABSTRACT:

Provided herein are chimeric zinc finger proteins comprising flexible linkers of at least 6 amino acids in length. Also provided are methods of making and using these chimeric zinc finger proteins.

14 Claims, 10 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 4

L1: Entry 41 of 50

File: USPT

Nov 12, 2002

DOCUMENT-IDENTIFIER: US 6479626 B1

TITLE: Poly zinc finger proteins with improved linkers

Drawing Description Text (73):

In addition to the promoter, the expression vector typically contains a transcription unit or expression cassette that contains all the additional elements required for the expression of the nucleic acid in host cells, either prokaryotic or eukaryotic. A typical expression cassette thus contains a promoter operably linked, e.g., to the nucleic acid sequence encoding the zinc finger protein, and signals required, e.g., for efficient polyadenylation of the transcript, transcriptional termination, ribosome binding sites, or translation termination. Additional elements of the cassette may include, e.g., enhancers, and heterologous spliced intronic signals.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)

[KDDC](#) | [Draw Desc](#) | [Image](#)

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42. Document ID: US 6453242 B1

L1: Entry 42 of 50

File: USPT

Sep 17, 2002

US-PAT-NO: 6453242

DOCUMENT-IDENTIFIER: US 6453242 B1

TITLE: Selection of sites for targeting by zinc finger proteins and methods of designing zinc finger proteins to bind to preselected sites

DATE-ISSUED: September 17, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Eisenberg; Stephen P.	Boulder	CO		
Case; Casey C.	San Mateo	CA		
Cox, III; George N.	Louisville	CO		
Jamieson; Andrew	San Francisco	CA		
Rebar; Edward J.	Berkeley	CA		

US-CL-CURRENT: 702/19; 435/6, 702/20, 702/21

**ABSTRACT:**

The invention provides criteria and methods for selecting optimum subsequence(s) from a target gene for targeting by a zinc finger protein. Some of the methods of target site selection seek to identify one or more target segments having a DNA motif containing one or more so-called D-able subsites having the sequence 5'NNGK3'. Other methods of the invention are directed to selection of target segments within target genes using a correspondence regime between different triplets of three bases and the three possible positions of a triplet within a nine-base site. In another aspect, the invention provides methods of designing zinc finger proteins that bind to a preselected target site. These methods can be used following the preselection of target sites according to the procedures and criteria described above. The methods of design use a database containing information about previously characterized zinc finger proteins.

19 Claims, 11 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 10

L1: Entry 42 of 50

File: USPT

Sep 17, 2002

DOCUMENT-IDENTIFIER: US 6453242 B1

TITLE: Selection of sites for targeting by zinc finger proteins and methods of designing zinc finger proteins to bind to preselected sites

Detailed Description Text (39):

Zinc finger proteins can be used to modulate the expression of any target polynucleotide sequence. The sequence can be for example, genomic, cDNA or RNA or an expressed sequence tag (EST). Typically, the target polynucleotide includes a gene or a fragment thereof. The term gene is used broadly to include, for example, exonic regions, intronic regions, 5'UTRs, 3' UTRs, 5' flanking sequences, 3' flanking sequences, promoters, enhancers, transcription start sites, ribosome binding sites, regulatory sites, poly-adenylation sites. Target genes can be cellular, viral or from other sources including purely theoretical sequences. Target gene sequences can be obtained from databases, such as GenBank, the published literature or can be obtained de novo. Target genes include genes from pathological viruses and microorganisms for which repression of expression can be used to abort infection. Examples of pathogenic viruses include hepatitis (A, B, or C), herpes virus (e.g., VZV, HSV-1, HSV-6, HSV-II, and CMV, Epstein Barr virus), HIV, ebola, adenovirus, influenza virus, flaviviruses, echovirus, rhinovirus, coxsackie virus, comovirus, respiratory syncytial virus, mumps virus, rotavirus, measles virus, rubella virus, parvovirus, vaccinia virus, HTLV virus, dengue virus, papillomavirus, molluscum virus, poliovirus, rabies virus, JC virus and arboviral encephalitis virus. Some examples of pathogenic bacteria include chlamydia, rickettsial bacteria, mycobacteria, staphylococci, treptococci, pneumococci, meningococci and conococci, klebsiella, proteus, serratia, pseudomonas, legionella, diphtheria, salmonella, bacilli, cholera, tetanus, botulism, anthrax, plague, leptospirosis, and Lyme disease bacteria.

43. Document ID: US 6451618 B2

L1: Entry 43 of 50

File: USPT

Sep 17, 2002

US-PAT-NO: 6451618

DOCUMENT-IDENTIFIER: US 6451618 B2

TITLE: Test for detecting substances which alter the conformational structure of zinc fingers

DATE-ISSUED: September 17, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hanas; Jay S.	Edmond	OK		

US-CL-CURRENT: 436/501; 435/6, 435/7.92, 436/546, 436/815

## ABSTRACT:

The present invention is a method and kit for analyzing a sample, preferably a liquid environmental sample, which may comprise a toxic xenobiotic element or compound, i.e., an environmental pollutant. The method and kit preferably utilize a portion of a molecule comprising a peptide zinc binding domain, known as a zinc finger.

8 Claims, 16 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 13

L1: Entry 43 of 50

File: USPT

Sep 17, 2002

DOCUMENT-IDENTIFIER: US 6451618 B2

TITLE: Test for detecting substances which alter the conformational structure of zinc fingers

Brief Summary Text (12):

In 1983, it was discovered that cysteine-rich eukaryotic regulatory proteins contain zinc-binding domains and require the zinc ion for function (Hanas et al., J.Biol.Chem., 258:14120). These zinc binding domains were subsequently termed "zinc fingers." A eukaryotic regulatory protein discovered to contain zinc was transcription factor IIIA (TFIIIA), a protein which regulates ribosome synthesis. Each of nine zinc fingers in this protein contains two cysteine (Cys) and two histidine (His) amino acids which bind to a zinc ion.

Detailed Description Text (24):

As shown herein, the Cys.sub.2 His.sub.2 zinc finger structure of TFIIIA is highly sensitive to inhibition by certain xenobiotic metal ions such as cadmium and aluminum. Inhibition of TFIIIA binding to the 5S ribosomal RNA gene was assayed by the DNase I protection method. The results are shown in FIG. 1. In this assay, TFIIIA isolated from frogs, or as a recombinant protein, was incubated for a short period of time with a radioactively labeled double-stranded DNA fragment containing the 5S ribosomal RNA gene sequence (120 base-pairs in length). In TFIIIA's role in regulating ribosome synthesis, the protein binds specifically and tightly to this 5S gene sequence. When this occurs, the bound protein protects a large region of the 5S RNA gene from DNase I digestion. DNase I normally degrades the 5S gene and in the process generates a series of differently sized DNA fragments which can be resolved by electrophoresis. TFIIIA binding protects a DNA region comprising approximately 53 base pairs from DNase I degradation.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KinID	DraInt Desc	Image
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44. Document ID: US 6421613 B1

L1: Entry 44 of 50

File: USPT

Jul 16, 2002

US-PAT-NO: 6421613

DOCUMENT-IDENTIFIER: US 6421613 B1

TITLE: Data processing of the maize *prolifera* genetic sequence

DATE-ISSUED: July 16, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nadimpalli; Ramgopal	Bloomfield	NJ		
Simmons; Carl R.	Des Moines	IA		

US-CL-CURRENT: 702/20; 435/6, 702/19, 703/11, 703/6, 707/1

## ABSTRACT:

The invention provides isolated *prolifera* nucleic acids and their encoded proteins. The present invention provides methods and compositions relating to altering *prolifera* levels in plants. The invention further provides recombinant expression cassettes, host cells, transgenic plants, and antibody compositions.

14 Claims, 0 Drawing figures

Exemplary Claim Number: 1

L1: Entry 44 of 50

File: USPT

Jul 16, 2002

DOCUMENT-IDENTIFIER: US 6421613 B1

TITLE: Data processing of the maize *prolifera* genetic sequenceBrief Summary Text (230):

In some embodiments, data representing a genetic sequence of the present invention is a data element within a data structure. The data structure may be defined by the computer programs that define the processes of identification, modeling, or analysis (see below) or it may be defined by the programming of separate data storage and retrieval programs subroutines or systems. Thus, the present invention provides a memory for storing a data structure that can be accessed by a computer programmed to implement a process for identification, analysis, or modeling of a genetic sequence. The data structure, stored within memory, is associated with the data representing the genetic sequence and reflects the underlying organization and structure of the genetic sequence to facilitate program access to data elements corresponding to logical sub-components of the genetic sequence. The data structure enables the genetic sequence to be identified, analyzed, or modeled. The underlying order and structure of a genetic sequence is data representing the higher order organization of the primary sequence. Such higher order structures affect transcription, translation, enzyme kinetics, or reflects structural domains or motifs. Exemplary logical sub-components which constitute the higher order organization of the genetic sequence include but are not limited to: restriction enzyme sites, endopeptidase sites, major grooves, minor grooves, beta-sheets, alpha helices, open reading frames (ORFs), 5' untranslated regions (UTRs), 3' UTRs, ribosome binding sites, glycosylation sites, signal peptide domains, intron-exon junctions, poly-A tails, transcription initiation sites, translation start sites, translation termination sites, methylation sites, zinc finger domains, modified amino acid sites, preprotein-protein junctions, proprotein-protein junctions, transit peptide

domains, single nucleotide polymorphisms (SNPs), simple sequence repeats (SSRs), restriction fragment length polymorphisms (RFLPs), insertion elements, transmembrane spanning regions, and stem-loop structures.

## CLAIMS:

2. The data processing system of claim 1, wherein said logical sub-component of said genetic sequence is a member selected from the group consisting of restriction enzyme sites, endopeptidase sites, major grooves, minor grooves, beta-sheet, alpha helices, ORFs, 5'UTRs, 3'UTRs, ribosome binding sites, glycosylation sites, signal peptide domains, intron-exon junctions, poly-A signals, transcription initiation sites, translation start sites, translation termination sites, methylation sites, zinc finger domains, modified amino acid sites, preprotein-protein junctions, protein-protein junctions, transit peptide domains, SNPs, SSRs, RFLPs, insertion elements, transmembrane spanning regions and stem-loop structures.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMPC	Draw. Desc	Image
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45. Document ID: US 6410248 B1

L1: Entry 45 of 50

File: USPT

Jun 25, 2002

US-PAT-NO: 6410248

DOCUMENT-IDENTIFIER: US 6410248 B1

TITLE: General strategy for selecting high-affinity zinc finger proteins for diverse DNA target sites

DATE-ISSUED: June 25, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Greisman; Harvey A.	Brookline	MA		
Pabo; Carl O.	Newton	MA		

US-CL-CURRENT: 435/7.2; 435/4, 435/5, 435/6, 435/69.1, 435/DIG.14, 435/DIG.15,  
435/DIG.2, 435/DIG.3, 435/DIG.4, 436/501

## ABSTRACT:

The present invention provides methods for making zinc finger proteins with high affinity for their targets, by sequentially selecting each finger of the protein.

15 Claims, 10 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 5

L1: Entry 45 of 50

File: USPT

Jun 25, 2002

DOCUMENT-IDENTIFIER: US 6410248 B1

TITLE: General strategy for selecting high-affinity zinc finger proteins for diverse DNA target sites

Detailed Description Text (56):

In addition to the promoter, the expression vector typically contains a transcription unit or expression cassette that contains all the additional elements

required for the expression of the nucleic acid in host cells, either prokaryotic or eukaryotic. A typical expression cassette thus contains a promoter operably linked, e.g., to the nucleic acid sequence encoding the zinc finger protein, and signals required, e.g., for efficient polyadenylation of the transcript, transcriptional termination, ribosome binding sites, or translation termination. Additional elements of the cassette may include, e.g., enhancers, and heterologous spliced intronic signals.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)

[KDDC](#) | [Draw Desc](#) | [Image](#)

46. Document ID: US 6235538 B1

L1: Entry 46 of 50

File: USPT

May 22, 2001

US-PAT-NO: 6235538

DOCUMENT-IDENTIFIER: US 6235538 B1

TITLE: Test for detecting substances which alter the conformational structure of zinc fingers

DATE-ISSUED: May 22, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hanas, Jay S.	Edmond	OK		

US-CL-CURRENT: 436/501; 435/6, 435/7.92, 436/546, 436/815

ABSTRACT:

The present invention is a method and kit for analyzing a sample, preferably a liquid environmental sample, which may comprise a toxic xenobiotic element or compound, i.e., an environmental pollutant. The method and kit preferably utilize a portion of a molecule comprising a peptide zinc binding domain, known as a zinc finger.

23 Claims, 16 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 13

L1: Entry 46 of 50

File: USPT

May 22, 2001

DOCUMENT-IDENTIFIER: US 6235538 B1

TITLE: Test for detecting substances which alter the conformational structure of zinc fingers

Brief Summary Text (12):

In 1983, it was discovered that cysteine-rich eukaryotic regulatory proteins contain zinc-binding domains and require the zinc ion for function (Hanas et al., J.Biol.Chem., 258:14120). These zinc binding domains were subsequently termed "zinc fingers." A eukaryotic regulatory protein discovered to contain zinc was transcription factor IIIA (TFIIIA), a protein which regulates ribosome synthesis. Each of nine zinc fingers in this protein contains two cysteine (Cys) and two histidine (His) amino acids which bind to a zinc ion.

Detailed Description Text (24):

As shown herein, the Cys.sub.2 His.sub.2 zinc finger structure of TFIIIA is highly sensitive to inhibition by certain xenobiotic metal ions such as cadmium and aluminum. Inhibition of TFIIIA binding to the 5S ribosomal RNA gene was assayed by

the DNase I protection method. The results are shown in FIG. 1. In this assay, TFIIIA isolated from frogs, or as a recombinant protein, was incubated for a short period of time with a radioactively labeled double-stranded DNA fragment containing the 5S ribosomal RNA gene sequence (120 base-pairs in length). In TFIIIA's role in regulating ribosome synthesis, the protein binds specifically and tightly to this 5S gene sequence. When this occurs, the bound protein protects a large region of the 5S RNA gene from DNase I digestion. DNase I normally degrades the 5S gene and in the process generates a series of differently sized DNA fragments which can be resolved by electrophoresis. TFIIIA binding protects a DNA region comprising approximately 53 base pairs from DNase I degradation.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#)

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47. Document ID: US 6180612 B1

L1: Entry 47 of 50

File: USPT

Jan 30, 2001

US-PAT-NO: 6180612

DOCUMENT-IDENTIFIER: US 6180612 B1

TITLE: Methods and compositions for targeting DNA metabolic processes using aminoglycoside derivatives

DATE-ISSUED: January 30, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hockensmith; Joel W.	Charlottesville	VA		
Muthuswami; Rohini	Denver	CO		

US-CL-CURRENT: 514/25; 514/39, 514/41

ABSTRACT:

Protein targets for disease intervention through inhibition of nucleic acid metabolism are disclosed. Novel polypeptides for one such target, DNA-dependent ATPase A, and novel polynucleotides encoding DNA-dependent ATPase A are disclosed. Phosphoaminoglycoside compounds which act on such protein targets to inhibit nucleic acid metabolism. In addition, screening assays for identifying compounds that inhibit nucleic acid-dependent ATPase activity, including, but not limited to, DNA-dependent ATPase A, are disclosed. Such compounds are useful in the treatment of diseases, including but not limited to cancer and infectious disease, through disruption of nucleic acid metabolism and induction of apoptosis. Moreover, methods for prevention and treatment of diseases including, but not limited to cancer and infectious disease are disclosed.

25 Claims, 28 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 23

L1: Entry 47 of 50

File: USPT

Jan 30, 2001

DOCUMENT-IDENTIFIER: US 6180612 B1

TITLE: Methods and compositions for targeting DNA metabolic processes using aminoglycoside derivatives

Brief Summary Text (84):

Finally, there are a number of proteins that are not readily classified according to

the specific or nonspecific categories. This third group of proteins is not generally grouped as a class but have the common feature of recognizing and binding to specific nucleic acid structures with neither the sequence specificity nor the electrostatic interactions of either group of proteins described above. This latter group would include proteins such as: i) *E. coli* RuvA and RuvB, which bind Holliday junctions and promote branch migration (Parsons et al., Proc. Natl. Acad. Sci. U. S. A. 89, 5452-5456 (1992); Muller et al., J. Biol. Chem. 268, 17185-17189 (1993)); ii) *E. coli* ribosomal protein L11, which recognizes the three-dimensional conformation of an RNA backbone and thus may regulate conformational changes during the ribosome elongation cycle (Ryan et al., J. Mol. Biol. 221, 1257-1268 (1991); Ryan and Draper. Biochemistry. 28, 9949-9956 (1989)); iii) topoisomerase II, which can yield cleavage of DNA following secondary structure-specific DNA recognition (Froelich-Ammon et al., J. Biol. Chem. 269, 7719-7725 (1994)); iv) DNA-dependent protein kinase, which phosphorylates proteins when activated by the presence of DNA double-stranded to single-stranded transitions (Morozov et al., Journal of Biological Chemistry. 269, 16684-16688 (1994); Chan and Lees-Miller. Journal of Biological Chemistry. 271, 8936-8941 (1996)); and v) transcription factor EBP-80, which also recognizes double-to single-stranded transitions in DNA (Falzon et al., Journal of Biological Chemistry. 268, 10546-10552 (1993)). The sequence specific binding proteins described above utilize a host of motifs for interacting with nucleic acids (zinc fingers, helix-turn-helix, "saddle", etc.). Different potential motifs for this latter group of proteins have not yet been elucidated.

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#) | [KMC](#) | [Draw Desc](#) | [Image](#)

48. Document ID: US 6037329 A

L1: Entry 48 of 50

File: USPT

Mar 14, 2000

US-PAT-NO: 6037329

DOCUMENT-IDENTIFIER: US 6037329 A

TITLE: Compositions containing nucleic acids and ligands for therapeutic treatment

DATE-ISSUED: March 14, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Baird; J. Andrew	San Diego	CA		
Chandler; Lois Ann	Encinitas	CA		
Sosnowski; Barbara A.	Coronado	CA		

US-CL-CURRENT: 514/44; 424/93.21, 435/320.1, 435/325, 435/455, 435/458, 435/69.1,  
530/350, 536/23.1

ABSTRACT:

Preparations of conjugates of a receptor-binding internalized ligand and a cytocide-encoding agent and compositions containing such preparations are provided. The conjugates contain a polypeptide that is reactive with an FGF receptor, such as bFGF, or another heparin-binding growth factor, cytokine, or growth factor coupled to a nucleic acid binding domain. One or more linkers may be used in the conjugation. The linker is selected to increase the specificity, toxicity, solubility, serum stability, or intracellular availability, and promote nucleic acid condensation of the targeted moiety. The conjugates are complexed with a cytocide-encoding agent, such as DNA encoding saporin. Conjugates of a receptor-binding internalized ligand to a nucleic acid molecule are also provided.

35 Claims, 34 Drawing figures  
Exemplary Claim Number: 1

Number of Drawing Sheets: 25

L1: Entry 48 of 50

File: USPT

Mar 14, 2000

DOCUMENT-IDENTIFIER: US 6037329 A

TITLE: Compositions containing nucleic acids and ligands for therapeutic treatment

Brief Summary Text (12):

The nucleic acid binding domain is poly-L-lysine in one embodiment. In other embodiments, the nucleic acid binding domain is a transcription factor selected from the group consisting of helix-turn-helix motif proteins, homeodomain proteins, zinc finger motif proteins, steroid receptor proteins, leucine zipper motif proteins, helix-loop-helix motif proteins, and .beta.-sheet motif proteins. In other embodiments, the nucleic acid binding domain binds nonspecifically to nucleic acids and is selected from the group consisting of poly-L-lysine, protamine, histone and spermine. In a preferred embodiment, the nucleic acid binding domain binds the coding region of a ribosome inactivating protein such as saporin. In another preferred embodiment, FGF is conjugated to poly-L-lysine.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KM/C	Draw Desc	Image
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 49. Document ID: US 6023659 A

L1: Entry 49 of 50

File: USPT

Feb 8, 2000

US-PAT-NO: 6023659

DOCUMENT-IDENTIFIER: US 6023659 A

\*\* See image for Certificate of Correction \*\*

TITLE: Database system employing protein function hierarchies for viewing biomolecular sequence data

DATE-ISSUED: February 8, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Seilhamer; Jeffrey J.	Los Altos Hills	CA		
Akerblom; Ingrid E.	Redwood City	CA		
Altus; Christina M.	Palo Alto	CA		
Klingler; Tod M.	Palo Alto	CA		
Russo; Frank	Redwood City	CA		
Au-Young; Janice	Berkeley	CA		
Hillman; Jennifer L.	Mt. View	CA		
Maslyn; Timothy J.	Cupertino	CA		

US-CL-CURRENT: 702/19; 702/20, 702/31

## ABSTRACT:

Disclosed is a relational database system for storing biomolecular sequence information in a manner that allows sequences to be catalogued and searched according to one or more protein function hierarchies. The hierarchies allow searches for sequences based upon a protein's biological function or molecular function. Also disclosed is a mechanism for automatically grouping new sequences into protein function hierarchies. This mechanism uses descriptive information obtained from "external hits" which are matches of stored sequences against gene sequences stored in an external database such as GenBank. The descriptive

information provided with the external database is evaluated according to a specific algorithm and used to automatically group the external hits (or the sequences associated with the hits) in the categories. Ultimately, the biomolecular sequences stored in databases of this invention are provided with both descriptive information from the external hit and category information from a relevant hierarchy or hierarchies.

45 Claims, 20 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 18

L1: Entry 49 of 50

File: USPT

Feb 8, 2000

DOCUMENT-IDENTIFIER: US 6023659 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Database system employing protein function hierarchies for viewing biomolecular sequence data

Detailed Description Paragraph Table (1):

Hierarchy A BIOLOGICAL FUNCTION HIERARCHY

C.1.0.0.0 Cellular-level function C.1.1.0.0 Cellular metabolism C.1.1.1.0 Energy metabolism C.1.1.2.0 Nucleic acid metabolism C.1.1.4.0 Lipid metabolism C.1.2.0.0 Signal transduction C.1.3.0.0 Cell cycle C.1.4.0.0 DNA repair C.1.5.0.0 Secretory pathway C.1.6.0.0 Sub-cellular localization C.1.6.1.0 Nuclear C.1.6.2.0 Plasma membrane C.1.6.3.0 Endoplasmic reticulum C.1.7.0.0 Ligand binding C.1.7.1.0 Calcium binding C.1.7.2.0 Growth factor binding C.1.7.3.0 Steroid binding C.1.7.4.0 Nucleic acid binding C.1.8.0.0 Cell-cell interaction C.2.0.0.0 Tissue-level function  
C.2.1.0.0 Apoptosis C.2.2.0.0 Growth and differentiation C.3.0.0.0 Organism-level function C.3.1.0.0 Development C.3.2.0.0 Fertilization C.3.3.0.0 Immune system C.3.4.0.0 Neurotransmission C.3.4.1.0 Neurotransmitters C.3.4.2.0 Neurotransmitter receptors C.3.4.99.0 Other neurotransmission proteins C.3.5.0.0 Disease genes C.3.5.1.0 Oncogenes C.3.5.2.0 Tumor suppressors C.3.5.99.0 Other disease genes  
Hierarchy B MOLECULAR FUNCTION HIERARCHY B.1.0.0.0. Structural Proteins B.1.1.0.0. Cytoskeleton B.1.1.1.0. Microfilaments B.1.1.2.0. Intermediate filaments B.1.1.3.0. Microtubules B.1.1.4.0. Coat proteins B.1.1.99.0. Other cytoskeletal proteins B.1.2.0.0. Ribosome B.1.2.1.0. Small subunit B.1.2.2.0. Large subunit B.1.3.0.0. Extracellular matrix B.1.4.0.0. Chromatin B.1.4.1.0. Histone B.1.4.2.0. Non-histone B.2.0.0.0. Transport B.2.1.0.0. Channels B.2.1.1.0. Potassium channels B.2.1.2.0. Calcium channels B.2.1.3.0. Chloride channels B.2.1.4.0. Sodium channels B.2.1.50.0. Channel inhibitors B.2.1.99.0. Other channels B.2.2.0.0. Transporters/Pumps B.2.2.1.0. Anion transporters/pumps B.2.2.2.0. Proton transporters/pumps B.2.2.3.0. Calcium transporters/pumps B.2.2.4.0. Sodium transporters/pumps B.2.2.5.0. Potassium transporters/pumps B.2.2.6.0. Phosphate transporters/pumps B.2.2.7.0. Amino acid transporters/pumps B.2.2.8.0. Protein/peptide transporters/pumps B.2.2.9.0. Vitamin transporters/pumps B.2.2.10.0. Sugar transporters/pumps B.2.2.11.0. Neurotransmitter transporters/pumps B.2.2.12.0. Viral transporters/pumps B.2.2.13.0. Metal transporters/pumps B.2.2.50.0. Transport/pump inhibitors B.2.2.99.0. Other transporters/pumps B.2.3.0.0. Carrier molecules B.2.3.1.0. 02 carriers B.2.3.2.0. Lipid carriers B.2.3.3.0. Protein/peptide carriers B.2.3.4.0. Metal carriers B.2.3.50.0. Carrier inhibitors B.2.3.99.0. Other carriers B.3.0.0.0. Regulatory Proteins B.3.1.0.0. Extracellular messengers B.3.1.1.0. Hormones B.3.1.2.0. Cytokines/Immune effectors B.3.1.3.0. Growth Factors B.3.1.4.0. Neuropeptides B.3.1.5.0. Vasomediators B.3.1.50.0. Extracellular message inhibitors B.3.1.99.0. Other extracellular messengers B.3.2.0.0. Intracellular messengers B.3.2.1.0. G proteins B.3.2.2.0. Cyclins B.3.2.3.0. Ras related proteins B.3.2.4.0. Calcium-sequestering proteins B.3.2.5.0. Signaling kinases B.3.2.5.1. Serine/Threonine Kinases B.3.2.5.2. Tyrosine kinases B.3.2.50.0. Intracellular message inhibitors B.3.2.99.0. Other intracellular messengers B.3.3.0.0. Receptors B.3.3.1.0. G protein coupled receptors B.3.3.2.0. Serine/threonine kinase receptors B.3.3.3.0. Tyrosine kinase receptors B.3.3.4.0. Nuclear receptors B.3.3.50.0. Receptor inhibitors B.3.3.99.0. Other receptors B.3.4.0.0. DNA regulatory proteins B.3.4.1.0. Transcription factors B.3.4.1.1. Homeobox proteins B.3.4.1.2. HLH proteins B.3.4.1.3. Leucine zipper proteins B.3.4.1.4. Zinc finger proteins

B.3.4.1.99. Other transcription factors B.3.4.2.0. TF-associated proteins  
 B.3.4.50.0. Regulator inhibitors B.3.4.99.0. Other DNA-regulatory proteins  
 B.3.5.0.0. RNA/Translation Regulatory proteins B.3.5.1.0. Translation initiation  
 factors B.3.5.2.0. Elongation factors B.3.5.3.0. Splicing factors B.3.5.50.0.  
 Regulator .about. inhibitors B.3.5.99.0. Other RNA regulatory proteins B.3.6.0.0.  
 Enzyme regulators B.3.6.1.0. Enzyme cofactors B.3.6.2.0. Protease inhibitors  
 B.3.6.3.0. Other inhibitors B.3.6.50.0. Regulator inhibitors B.3.6.99.0. Other  
 enzyme regulators B.3.7.0.0. Cytoskeletal regulators B.3.7.1.0.  
 Capping/Actin-sequestering proteins B.3.7.2.0. Crosslinkers/Bundling proteins  
 B.3.7.3.0. Motor proteins B.3.7.50.0. Regulator inhibitors B.3.7.99.0. Other  
 cytoskeletal regulatory proteins B.4.0.0.0. Molecular recognition B.4.1.0.0. Antigen  
 recognition B.4.1.1.0. MHC B.4.1.2.0. TCR B.4.1.3.0. Ig B.4.1.4.0. Other antigen  
 recognition proteins B.4.2.0.0. Intercellular/matrix adhesion B.5.0.0.0. Energy  
 transducers B.6.0.0.0. Protein metabolism B.6.1.0.0. Proteases B.6.1.1.0.  
 Metalloproteases B.6.1.2.0. Serine proteases B.6.1.3.0. Cysteine proteases  
 B.6.1.99.0. Other proteases B.6.2.0.0. Protease inhibitors

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50. Document ID: NZ 511564 A WO 200027878 A1 AU 200010613 A EP 1129109 A1  
 US 20020064824 A1 JP 2002529067 W

L1: Entry 50 of 50

File: DWPI

Oct 25, 2002

DERWENT-ACC-NO: 2000-376494

DERWENT-WEEK: 200274

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TITLE: A polysome display-based technique for producing and selecting zinc finger nucleic acid binding proteins with desired binding characteristics

INVENTOR: CHOO, Y; MOORE, M

PRIORITY-DATA: 1998GB-0024544 (November 9, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
NZ 511564 A	October 25, 2002		000	C07K014/47
WO 200027878 A1	May 18, 2000	E	046	C07K014/47
AU 200010613 A	May 29, 2000		000	C07K014/47
EP 1129109 A1	September 5, 2001	E	000	C07K014/47
US 20020064824 A1	May 30, 2002		000	C07H021/04
JP 2002529067 W	September 10, 2002		049	C12N015/09

INT-CL (IPC): C07 H 21/04; C07 K 1/22; C07 K 14/47; C12 N 15/00; C12 N 15/09; C12 N 15/63; C12 N 15/70; C12 N 15/74; C12 P 19/34; C12 P 21/02; C12 P 21/06; C12 Q 1/68

ABSTRACTED-PUB-NO: US20020064824A

BASIC-ABSTRACT:

NOVELTY - A method (I) for producing a zinc finger nucleic acid binding protein, comprising preparing a zinc finger according to design rules, varying the protein at one or more positions and selecting variants which bind to a target nucleic acid sequence by polysome display, is new.

USE - (I) is used to produce zinc finger binding proteins with desired binding characteristics.

ADVANTAGE - (I) comprises a polysome display technique which permits the isolation of binding polypeptides without resorting to phage display techniques.

ABSTRACTED-PUB-NO:

WO 200027878A EQUIVALENT-ABSTRACTS:

NOVELTY - A method (I) for producing a zinc finger nucleic acid binding protein, comprising preparing a zinc finger according to design rules, varying the protein at one or more positions and selecting variants which bind to a target nucleic acid sequence by polysome display, is new.

USE - (I) is used to produce zinc finger binding proteins with desired binding characteristics.

ADVANTAGE - (I) comprises a polysome display technique which permits the isolation of binding polypeptides without resorting to phage display techniques.

L1: Entry 50 of 50

File: DWPI

Oct 25, 2002

DERWENT-ACC-NO: 2000-376494

DERWENT-WEEK: 200274

COPYRIGHT 2003 DERWENT INFORMATION LTD

TITLE: A polysome display-based technique for producing and selecting zinc finger nucleic acid binding proteins with desired binding characteristics

Basic Abstract Text (1):

NOVELTY - A method (I) for producing a zinc finger nucleic acid binding protein, comprising preparing a zinc finger according to design rules, varying the protein at one or more positions and selecting variants which bind to a target nucleic acid sequence by polysome display, is new.

Equivalent Abstract Text (1):

NOVELTY - A method (I) for producing a zinc finger nucleic acid binding protein, comprising preparing a zinc finger according to design rules, varying the protein at one or more positions and selecting variants which bind to a target nucleic acid sequence by polysome display, is new.

[Full](#) [Title](#) [Citation](#) [Front](#) [Review](#) [Classification](#) [Date](#) [Reference](#) [Sequences](#) [Attachments](#)

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Term	Documents
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FINGERS	176051
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RIBOSOMES	4875
POLYSOME	414
POLYSOMES	699
((POLYSOME OR RIBOSOME) SAME (ZINC ADJ FINGER)).USPT,PGPB,JPAB,EPAB,DWPI.	50
(ZINC FINGER SAME (RIBOSOME OR POLYSOME)).USPT,PGPB,JPAB,EPAB,DWPI.	50

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